FINAL

Noxious Weed Trust Fund

Programmatic Environmental Impact Statement

Montana Department of Agriculture

May 1992

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Agricultural and Biological Sciences Division

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SUMMARY

FINAL PEIS FOR THE MONTANA NOXIOUS WEED TRUST FUND GRANTS PROGRAM

This final programmatic environmental impact statement (FPEIS) on the Montana Noxious Weed Trust Fund program describes and analyzes the environmental impacts of the Montana Noxious Weed Trust Fund grants program.

The FPEIS discusses: background information on the program, local, state and federal laws; a history of noxious weeds, weed management methods and programs; a description of the noxious weed trust fund grants program; the affected environment; program alternatives; direct, indirect, and cumulative impacts of the program; and comments from the public.

Most of the changes in the final PEIS are included in Chapter 5, where Alternative 2 was clarified. There were other minor text changes, as noted throughout the comments. All appendices can be found in the Draft Environmental Impact Statement, published in December, 1991 and are available through the MDA.

From data presented in the FPEIS, it was determined that the noxious wed grants program represents approximately 10% of the total herbicide use for noxious weed control in the state. The remaining 90% of herbicides purchased for noxious weed and non-cropland use is administered under other state, federal, local, and private programs. It was also determined that the program has allocated 33% of its total revenue toward support of nonchemical weed management programs. This accounts for 50% of the state's biological weed control research effort.

Cumulative adverse impacts resulting from herbicides and other weed management methods applied through the program were determined to be negligible. Specific potential adverse impacts are discussed in Chapter 6 of the FPEIS, including indirect impacts to the environment from herbicide, mechanical, and biological weed management methods. Positive impacts discussed include: increased public awareness of noxious weeds; development of cooperative weed management projects among local, state, and federal agencies and private organizations; and promotion of integrated methods for managing weeds.

The document considered three alternatives: no action (continuation of the existing program), general administrative modifications to the program, and discontinuation of the program.

Alternative 1 - No Action - Continuation of the Existing Program - would not allow the MDA to adequately comply with requirements of the Montana Environmental Policy Act. It was determined that there was a need for improved evaluation of the projects to better determine cumulative impacts.

Alternative 2 - General Administrative Modifications to the Existing Program - is the preferred alternative. The FPEIS includes specific information on Alternative 2 that outlines a 0.5% increase in administrative costs and improved project environmental review and evaluation.

Alternative 3 - Discontinuation of the NWTF Program - was not an acceptable alternative to most commenters on the Draft PEIS.

The Department feels that the DPEIS and the FPEIS provide beneficial information for the future guidance of the state Noxious Weed Trust Fund Grants program.

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ABSD	Agricultural and Biological Sciences Division
ADI	Acceptable Daily Intake
AI	Active Ingredient
AMSL	Above Mean Sea Level
APHIS	Animal Plant Health Inspection Service
ARM	Administrative Rules of Montana
ARS	Agricultural Research Service
BC	Bureau of the Census
BEA	Bureau of Economic Analysis
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BPA	Bonneville Power Administration
CAST	Council for Agricultural Science Technology
CDA	Control Droplet Applicator
CEC	Cation Exchange Capacity
CECRA	Comprehensive Environmental Cost Recovery Act
CES	County Extension Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFS	Cubic Feet Per Second
CNWCA	County Noxious Weed Control Act
CRP	Conservation Reserve Program
DOE	U.S. Department of Energy
DSL	Department of State Lands (Montana)
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FPEIS	Final Programmatic Environmental Impact Statement
FS	Forest Service
FY	Fiscal Year
GNP	Glacier National Park
IWM	Integrated Weed Management
MACGPA	Montana Agricultural Chemical Groundwater Protection Act
MBOGC	Montana Board of Oil and Gas Conservation
MCA	Montana Codes Annotated
MDA	Montana Department of Agriculture
MDFWP	Montana Department of Fish, Wildlife, and Parks
MDHES	Montana Department of Health and Environmental Sciences
MDOT	Montana Department of Transportation
MEPA	Montana Environmental Policy Act
MWCA	Montana Weed Control Association
NOEL	No Observable Effect Level
NPA	National Planning Association
NRCC	National Research Council of Canada
NWTF	Noxious Weed Trust Fund

PEIS	Programmatic Environmental Impact Statement
PL	Public Law
RIT	Resource Indemnity Trust
SWCP	Southwestern Cooperative Weed Control Project
USC	United States Code
USDA	U.S. Department of Agriculture
USDC	U.S. Department of Commerce
USDI	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WSSA	Weed Science Society of America
YNP	Yellowstone National Park

INTRODUCTION

Chapter 1

Noxious Weed Trust Fund

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CHAPTER 1

INTRODUCTION

BACKGROUND FOR THE PROGRAMMATIC EIS

The Montana Department of Agriculture (MDA) administers the Noxious Weed Trust Fund (NWTF) under the provisions of the Montana Noxious Weed Trust Fund Act of 1985 (Title 80-7-801 *et seq.*, Montana Codes Annotated (MCA)). The MDA collects funds from the herbicide sales surcharge (80-7-812, MCA), and a vehicle weed fee (61-3-510, MCA and 23-2-803, MCA) and allocates monies through grants or contract funds to communities, weed districts, or other entities it considers appropriate for noxious weed management projects. Appendix A (DPEIS) contains the Montana Noxious Weed Trust Fund/ Act.

The MDA has determined that the grants program constitutes a major state action requiring the preparation of a Programmatic Environmental Impact Statement (PEIS) as dictated by the Montana Environmental Policy Act (MEPA) (Title 75-1-101, MCA) and rules (4.2.312-337 Administrative Rules of Montana (ARM)). Based on this decision, the MDA contracted with Chen-Northern, Inc. of Helena, Montana to prepare the Programmatic Environmental Impact Statement.

MEPA requires all state agencies to recognize and consider to the fullest extent possible the consequences that their actions may have on the quality of the human environment (75-1-201, MCA) and directs them to:

- utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment; and
- identify and develop methods and procedures which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations.

A "programmatic review" is a MEPA document that is defined as a "general analysis of related agency-initiated actions, programs or policies, or the continuance of a broad policy or program" that may "in part or in total...constitute a major state action significantly affecting the quality of the human environment" (4.2.328, ARM). Programmatic reviews must discuss the impacts associated with the agency action or program, alternative ways of conducting the action, and the cumulative environmental effects of the alternatives in relation to other programs of a similar nature. MEPA requires the MDA to:

- issue a Draft Programmatic Environmental Impact Statement;
- encourage and accept public comments on the draft; and
- issue a Final PEIS. In accordance with the model MEPA rules adopted by MDA, the final PEIS may:
  - modify alternatives, including the preferred alternative;
  - develop and evaluate alternatives not previously given serious consideration;
  - supplement, improve, or modify the analysis contained in the draft;
  - make factual corrections; and,
  - explain why comments do not warrant further response.

This document describes the NWTF grants program as currently administered, the existing environment and resources the program affects, and the direct, indirect, and cumulative impacts the program has on the natural and human environment. This PEIS will assist the MDA in planning and decision-making by presenting an integrated and interdisciplinary analysis of administrative alternatives for the NWTF program. Analysis of impacts in this document is based on literature research, past programs, interviews with project participants, and public concerns.

A 45-day public comment period followed publication of the Draft PEIS. Public hearings were held during this period by the MDA.

Based upon comments received on the DPEIS and public hearings the MDA's proposed decision is Alternative 2 as modified in this document. Alternative 2 will allow MDA to comply with MEPA by improved evaluations of project proposals.

PERCEPTIONS OF NWTF PROGRAM

The MDA prepared a scoping document to seek public input on the existing NWTF grants program (Appendix B, DPEIS). Primary distribution of the scoping document included individuals, organizations, and groups who have participated in the NWTF program in the past or were known to the MDA to be familiar with the program. Copies of this document were mailed during March, 1990 to an estimated 300 individuals, agencies, and organizations including county weed supervisors, NWTF advisory council members, grant participants, agricultural scientists and conservation groups. Thirty-nine individuals and/or organizations responded with written comments while 33 persons presented oral testimony at four public meetings to help determine the scope of the PEIS and voice their concerns over administration of the NWTF program. The scoping document does not represent a statistically valid sampling or measure of public opinion regarding the NWTF program.

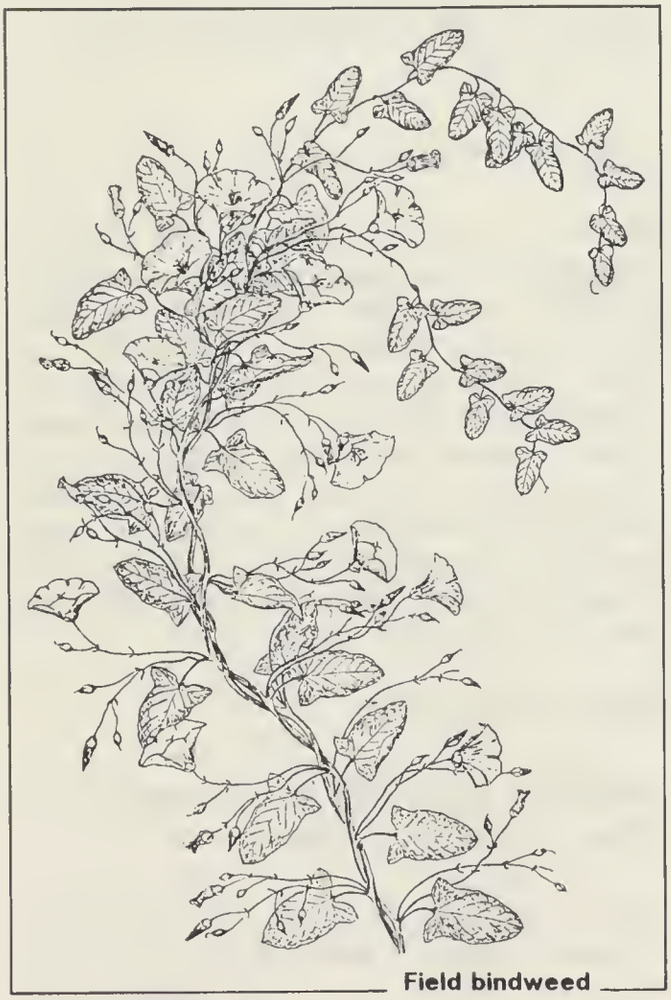
Various opinions and concerns were expressed during the scoping process by people who were familiar with the NWTF program, but there was no general consensus among commenters. Some commenters thought that the proposed PEIS was not needed or would be too costly to prepare, while almost an equal number believed that the PEIS was necessary to establish control measures for the NWTF program. Others seemed confused by the PEIS, commenting that they saw no need for an EIS to be prepared for each grant proposal. The role of a PEIS for MEPA compliance was apparently not understood by many commenters even though they were familiar with the NWTF program.

Some individuals indicated that the program should not change, while others believed a monitoring program or environmental review process should be established. Some thought there should be more funding for weed control research, research on the effects of chemical weed control treatment, and investigation of biological control, whereas others stated there should be no money spent for weed control research. Some individuals thought that those applying for grants should demonstrate a long-term commitment to controlling weeds and that proposed projects should be judged on scientific merit and relevance to solving weed problems, rather than on a person's affiliation with a particular group. Others expressed the view that the program should fund a few high-quality projects, rather than many mediocre projects. Some felt that criteria for acceptance of a proposed project should be consistent and unbiased. Many discussed the need for and appreciation of the NWTF program. Public input has helped the MDA focus on these and other issues related to the program.

In addition to scoping concerns, a survey of members of the NWTF advisory council and Montana Weed Control Association, county weed board supervisors, agricultural scientists, and former grant recipients was conducted by Chen-Northern, Inc. in April 1991. A questionnaire was sent out to approximately 75 people (Appendix B, DPEIS). Persons closely involved with the NWTF program generally agreed with the way it has been administered. Ninety-one percent of the 32 people interviewed believed that the NWTF program, as it is presently administered, is an effective mechanism for distributing monies for

weed control in Montana. Most respondents (72%) approved of the current funding allocation for weed control, research, and education. Slightly fewer (69%) believed that the environmental information required is adequate to ensure protection of area resources.

The majority of those interviewed (75%) did not favor allocating additional monies to administer the NWTF program. Fifty-three percent expressed the view that monitoring or auditing to evaluate project results is important.



Field bindweed

About 50% of the 32 respondents were of the opinion that the program should not be changed; however, many suggestions also were made to modify the program. Suggested changes included:

- Fund grants fully or not at all.
- Expand the program.
- Reduce paperwork and bureaucracy.
- Drop the 1% surcharge on herbicides.
- Distribute grants more evenly across the state.
- Provide justification for grant rejections.

Problems were identified by those interviewed concerning interaction with the public. The most frequently expressed concern was that the public is poorly informed about noxious weeds and herbicides. These people attributed the public perception that herbicides are harmful to human health and the environment to insufficient education. Other public concerns identified by the respondents were loss of non-target plants, effectiveness of weed control programs, and high cost of weed control.

OTHER LAWS AND REGULATIONS

Other state and federal agencies that have applicable and/or relevant laws and regulations regarding weed control or the environmental effects thereof include:

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), administered by the EPA, provides for the registration of pesticides, certification of applicators to apply restricted use pesticides, and enforcement of pesticide regulations. FIFRA also provides for individual states to obtain primacy for enforcement of FIFRA regulations as long as the states' requirements are at least equal to federal requirements. The 1988 amendments to FIFRA require the reregistration of all pesticides registered prior to November 1, 1984. This process involves several of the currently used herbicides and will require that ecological effects, environmental fate, and health risk data be submitted to EPA to resolve any questions in these areas.

MONTANA DEPARTMENT OF AGRICULTURE

Montana Weed Control Act

The Montana Weed Control Act (80-7-701 *et seq.*, MCA) gives the Montana Department of Agriculture the authority to provide technical assistance and services to local governments, agricultural producers and the general public on the management and control of noxious plants. This assistance and service may include information on the location of infested acreages and an assessment of the economic and environmental impacts on the state and its citizens as a result of these conditions. In addition, MDA makes information available on the proper use of herbicides and recommends where certain management tools should be utilized in order to avoid adverse economic or environmental impacts.

The Montana Weed Control Act also authorizes MDA to seek federal funds under 43 USC 1242 to implement management of noxious plants on federal lands in cooperation with any federal agency and the local government body responsible for noxious plant management.

Montana Pesticides Act

The Montana Department of Agriculture administers the Montana Pesticides Act (80-8-801 *et seq.*, MCA) which requires the registration of all pesticides manufactured, formulated, distributed, sold, or transported in the state. Commercial and government applicators must be licensed to apply pesticides and farm applicators must obtain special use permits for restricted use pesticides. In addition, pilots and aircraft involved with aerial application must be registered by the Montana Department of Commerce.

The State of Montana has primacy for enforcement of FIFRA under the Montana Pesticides Act.

County Noxious Weed Control Act

The County Noxious Weed Control Act (CNWCA) (7-22-2101 *et seq.*, MCA), which is contained in Appendix A (DPEIS), is administered at the county level. The Act states that it is unlawful for any person to allow noxious weeds to propagate or go to seed on his or her land and encourages landowners to file weed control plans. State law requires counties to develop weed control districts to plan and implement weed control efforts. County com-missioners appoint a district weed board that is responsible for administration and enforcement of the district's noxious weed program. The CNWCA provides for the promulgation of rules to list statewide noxious weeds and allows for county-wide listing of additional species.

MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

Montana Water Quality Act

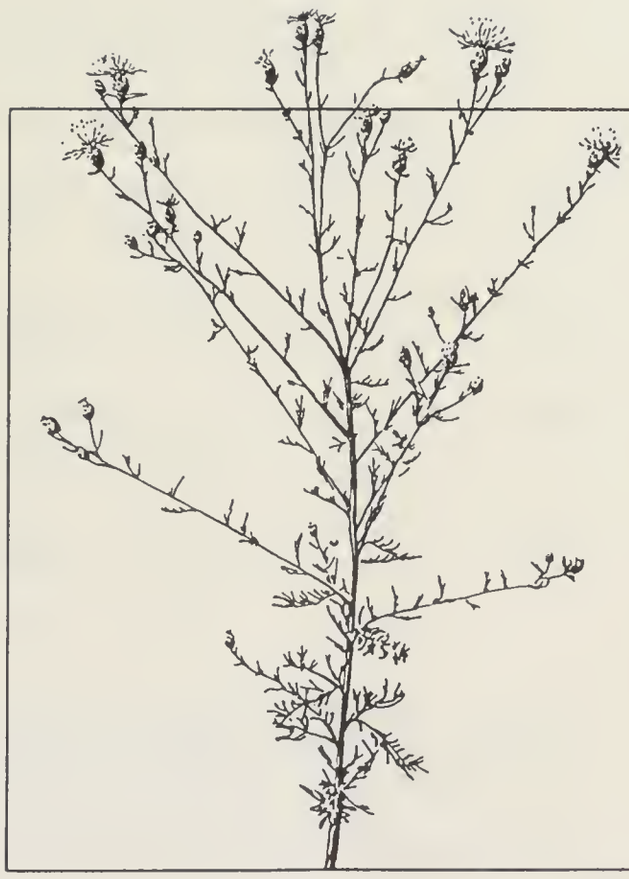
The Water Quality Bureau of the Montana Department of Health and Environmental Sciences (MDHES) is responsible for administration of the Montana Water Quality Act (75-5-101 *et seq.*, MCA). This law provides a framework for classification of surface and ground water, establishes surface and ground water quality standards, and provides for a permit program to control discharge of pollutants into state waters. State waters are required to be free of discharges that create toxic concentrations harmful to human, animal, plant, and aquatic life.

MDA AND MDHES

Montana Agricultural Chemical Ground Water Protection Act

The Montana Agricultural Chemical Ground Water Protection Act (MACGPA) (80-15-100 *et seq.*, MCA), was adopted by the 1989 legislature and implemented on January 1, 1990. Administered jointly by the MDA and the MDHES, the act charges MDA with development of agricultural chemical ground water plans and monitoring programs and MDHES with adoption of ground water quality standards and ground water monitoring requirements. Each agency administers enforcement provisions under the Act. The MDA rules were implemented December, 1990, and the MDHES will complete its portion of the rule-writing process in 1992.

HISTORY OF NOXIOUS WEEDS, WEED MANAGEMENT METHODS AND PROGRAMS



Chapter 2

Noxious Weed Trust Fund

Programmatic Environmental Impact Statement

CHAPTER 2

HISTORY OF NOXIOUS WEEDS, WEED MANAGEMENT METHODS AND PROGRAMS

ORIGIN AND HISTORY OF NOXIOUS WEEDS

Introduced plants often are aggressive colonizers following disturbance to native vegetation and soil. When these plants conflict, restrict, or otherwise interfere with land management objectives, they are commonly referred to as weeds. Weeds typically have reproductive, morphological, and physiological attributes that allow them to effectively compete for growing space. Most weeds have several of the following characteristics:

- Perennial in nature, reproducing by rhizomes, roots, and/or vegetative plant parts.
- Continuous seed production for as long as growing conditions permit.
- Effective ways of dispersing seed.
- Ability of seeds to remain dormant in the soil for long periods.
- Ability to grow under adverse environmental conditions.
- Adaptations to a wide variety of soil and climatic conditions.
- Ability to effectively compete for soil moisture, nutrients, and sunlight.
- Genetic adaptability.

Once a plant has been classified as a weed, it only attains a "noxious" status by legislation (Lacey and Olson, in press). The County Noxious Weed Control Act Rules (Appendix A, DPEIS) currently designate 15 exotic plants as noxious weeds in the state. These plants are divided into three categories based on the amount of acreage infested and potential for invasion. Table 2-1 lists each noxious weed by category, origin, date of introduction, life form, reproduction, habitat, and affected acreage.

Category 1 weeds are currently established and generally widespread. Spotted knapweed, leafy spurge, Canada thistle, St. Johnswort, and field bindweed are the Category 1 weeds currently affecting the largest acreage. The remaining Category 1 weeds--diffuse knapweed, Russian knapweed, Dalmatian toadflax, and whitetop--affect much smaller acreage but have the potential for rapid spread.

Category 2 weeds have recently been introduced to the state or are rapidly spreading. Noxious weeds included in this category are dyers woad, purple loosestrife, and sulfur cinquefoil. With the exception of sulfur cinquefoil, these weeds currently affect relatively small tracts of land in the state; for instance, dyers woad infested approximately 125 acres in 1987 and purple loosestrife is found in approximately five locations with less than 200 total acres.

Category 3 weeds have not yet been detected in the state or are found only in scattered, localized infestations. This category includes yellow starthistle, common crupina, and rush skeletonweed. Yellow starthistle and rush skeltonweed have been reported in Montana. Currently, common crupina and rush skeletonweed are found in Idaho, California, Washington, and Oregon.

Noxious weeds were brought into this country from Europe and Eurasia during colonization and early settlement. They were either introduced intentionally for their perceived value to man, such

TABLE 2-1 LIST OF MONTANA NOXIOUS WEEDS

Category 1	Family	Origin	Date of Introduction	Life Form	Reproduction	Habitat	Other	Acreage Affected
Leafy spurge (Euphorbia esula)	Spurge	Eurasia	Brought to U.S. in 1827[1]. Intro. to Montana in 1917 as hay seed from N. Dakota [4]	Perennial forb	Root stalks, seed	Dry upland sites; moist areas; shallow rocky soils	Explosive seed capsules; milky sap; seeds viable for 8 years[1]	500,618[3]
Canada thistle (Cirsium arvense)	Sunflower	Eurasia	Intro. to Canada late 19th Century [1]; noted in Montana in 1901[5]	Perennial forb	Root stalks; seed	Disturbed sites; pastures; meadows; dryland & irrigated cultivated crops	Extensive horizontal roots; male & female flowers	1,879,106[3]
Whitetop (Cardaria draba)	Mustard	Europe	Reported in Montana in 1931[10]	Perennial forb	Root stalks; seed	Common in irrigated crops, dryland grain, and rangeland	Deep rooted; prefers slightly alkaline soils	56,301[3]
Field bindweed (Convolvulus arvensis)	Morning glory	Europe	Noted in Montana in 1901 publication [5]	Perennial forb	Root stalks; seed	Disturbed sites; cultivated fields	Taproot up to 60 feet long; seeds viable for 50 years[1]	668,772[3]
Russian knapweed (Centaurea repens)	Sunflower	Eurasia	Intro. to North America 1898[1]. Reported in Montana in 1931[10]	Perennial forb	Root stalks; seed	Irrigated and dryland pasture; range; hayland; cropland	Horses develop nervous disorders when plant is grazed	47,893[3]
Spotted knapweed (Centaurea maculosa)	Sunflower	Eurasia	1920's[2] - alfalfa & clover seed contaminant	Biennial/perennial forb	Seed	Disturbed sites; pastures; rangelands; hayland		4,721,060[3]
Diffuse knapweed (Centaurea diffusa)	Sunflower	Eurasia	Intro. with spotted knapweed[2]	Annual/perennial/biennial forb	Seed	Disturbed areas; rangeland; pastures; hayland		10,349[3]
Dalmatian toadflax (Linaria dalmatica)	Snapdragon	Europe	Reported in Montana in 1931[10]	Perennial forb	Root stalks, seed	Disturbed areas, rangeland	Deep root system; waxy leaves	98,765[3]
St. Johnswort (Hypericum perforatum)	St. Johnswort	Europe	Reported in Montana by 1910[10]	Perennial forb	Root stalks; stolon; seed	Meadows; dry sandy or gravelly soils; disturbed sites; rangeland	Poisonous (photosensitization)	514,099[3]

Category 2	Family	Origin	Date of Introduction	Life Form	Reproduction	Habitat	Other	Acreage Affected
Dyers woad (Isatis tinctoria)	Mustard	Europe	Intro. to U.S. as source of dyes. Intro. to Utah in 1917[1]. Reported in Montana in 1958'[3]	Winter annual/biennial perennial forb	Seed; tproot	Disturbed areas; rangeland	Deep taproot	323 [12]
Purple loosestrife (Lythrum salicaria & L. virgatum)	Loosestrife	Eurasia	Intro. to U.S. in early 1800's; first reported in Montana in 1987[6]	Perennial forb	Root stalks; seed	Floodplains; marsh edges; river margins; seasonally flooded impoundments	Long lived	Only noted in Cascade, Missoula, and Lake Counties
Sulfur cinquefoil (Potentilla recta)	Rose	Europe	Ravalli County - 1948 [9]	Perennial forb	Seed	Dry fields, wastelands; pastures; meadows; rangeland	Troublesome in limestone regions	Unknown

Category 3	Family	Origin	Date of Introduction	Life Form	Reproduction	Habitat	Other	Acreage Affected
Yellow starthistle (Centaurea solstitialis)	Sunflower	Europe	Ravalli County - 1958[8]	Winter annual/forb	Seed	Disturbed areas; rangeland, dryland and irrigated pastures.	Causes chewing disease in horses (nervous disorder)[1]	Ravalli, Flathead, Gallatin and Liberty Counties
Common crupina (Crupina vulgaris)	Sunflower	Europe	1969 - Idaho Found in Idaho, Oregon, Washington and California [11].	Winter annual/forb	Seed	Well drained, rocky to silt loam soil		–
Rush skeletonweed (Chondrilla juncea)	Sunflower	Eurasia	Currently in ID, WA, OR, CA [1].	Perennial	Root stalks; seed	Well drained soils; disturbed areas; dryland & irrigated crops	Milky latex sap; extensive and deep root system	Sanders County

1 Whitson, T.D. 1987
2 Locken, L.J. 1985
3 Lacey, C.A. 1987a
4 Barreto, C.L. 1982
5 Blankenship, J.W. 1901
6 Brenneman, J.E. et al. 1988
7 Fay, P. 1987
8 Lacey, C.A. 1986
9 Rice, P. et al. In press
10 Forcella & Harvey 1980
11 Prather, T.S. et al. 1991
12 NWTF unpublished data

as for livestock feed, dyes, or as ornamentals, or unintentionally as "stowaways" in seed, feed grain, hay, or ship ballast. Once established, they may spread rapidly by both natural (e.g., wind, water, and animals) and artificial means (e.g., transportation systems, farming equipment, and planting crops contaminated with weed seeds). Figure 2-1 shows the spread of eight noxious weeds in Montana between 1920 and 1980. Although weeds commonly invade disturbed or environmentally stressed land, some species have the ability to invade native vegetation in good and excellent condition (Tyser and Key 1988; Harris and Cranston 1979; Myers and Berube 1983). Once established, noxious weeds compete efficiently with native plants for nutrients, light, and moisture.

ENVIRONMENTAL EFFECTS

The invasion of noxious weeds on range and woodland sites has a profound impact on native plants. Spotted knapweed invasion into undisturbed grasslands in Glacier National Park was shown to decrease the number and frequency of native species (Tyser and Key 1988). Similar impacts on native plants caused by spotted knapweed have been reported in other areas in western Montana (Bedunah and Carpenter 1989; Lesica 1991). Leafy spurge, yellow starthistle, and dyers woad can also adversely affect native vegetation (Belcher and Wilson 1989; Maddox and Mayfield 1985; West and Farah 1989).

The influence of noxious weeds on rare native plant species and plant communities is currently being documented. Spotted knapweed is known to affect a number of rare plants in Montana, including sapphire rockcress and Howell's gumweed (Shelly 1986). Seedling establishment and fitness of sapphire rockcress was reported to decline with increasing competition from spotted knapweed (Lesica and Shelly 1991; Hamilton and Mitchell-Olds 1988). It is reported that the Nature Conservancy is concerned about the impact of spotted knapweed and sulfur cinquefoil on Spalding's catchfly (Hall, B. 1991). The largest known population of this threatened plant is located on the Tobacco Plains north of Eureka, Montana. Concern has also been expressed about the impact of spotted knapweed and sulfur cinquefoil on rare plant communities located near Hot Springs, Montana (Lesica 1991).

Noxious weeds are recognized as having a detrimental impact on wildlife, especially big game animals that utilize foothill and mountain slopes as critical winter range. A U.S. Forest Service report estimated that forage loss due to spotted knapweed invasion of big game winter range could cause a decline of 220 elk on the Lolo National Forest by the year 1998 (Spoon *et al.* 1983). In western Montana, elk use was considerably less on spotted knapweed-infested sites compared with bunchgrass sites (Bedunah and Carpenter 1989). Spotted knapweed was not detected in the diet of mule deer on winter range in Montana although it was a common plant on most sites (Guenther 1989).

Habitat for upland game birds and waterfowl is also threatened by noxious weeds. Spotted knapweed and sulfur cinquefoil are invading the bunchgrass ranges of northern Lincoln County that provide habitat for the Columbian sharp-tailed grouse. Grouse habitat is tied directly to the structure of the rough fescue community which would be seriously altered by invasion of these two noxious weeds (Hall, B. 1991). Purple loosestrife has been shown to degrade waterfowl habitat by replacing native food plants critical to ducks and geese (Friesen 1966; Thompson *et al.* 1987).

Noxious weeds may benefit some wildlife species. They provide cover, habitat, and a source of feed for many game and non-game birds (Weigand 1977). Small rodents also use the seeds as a food source (Lacey, C.A. personal observation).

Noxious weeds have been found to degrade water quality and increase soil erosion. A study conducted in western Montana compared surface runoff and sediment yield on spotted knapweed-infested sites with similar sites dominated by a native bunchgrass community. Surface runoff and sediment yield were reported to be 56% and 192% higher, respectively, on spotted knapweed sites compared with bluebunch wheatgrass sites (Lacey, J.R. *et al.* 1989). However, the ability of noxious weeds to rapidly establish disturbed sites may help to stabilize soil in areas devoid of native vegetation.

Noxious weeds are often considered to be detrimental to recreational activities and to the experience of recreational users. The presence of

The Spread of Eight Montana Noxious Weeds, 1920-1980
NWTF-Programmatic EIS
FIGURE 2-1

Source: Forcella and Harvey 1981

weeds in campgrounds, at boat launches, beaches, meadows, and riparian areas can detract from the desirability and usefulness of these sites. Weeds along trails can be unsightly and detract from the enjoyment of native vegetation. The stiff stalks, burrs, thorns, and saps of weeds can be barriers to some forms of recreation and can cause injury or allergies to recreational users.

The extent to which noxious weeds affect the visual resource is primarily a function of the public's perception of weeds and the physical attributes of specific weeds. Most weeds are visually significant only when seen in foreground viewing distance. Some weeds blend with the surrounding vegetation, or even add a diversity of color that does not detract from the vista. Others have physical characteristics (e.g., spreading or thorny stalks) that make them visually unpleasant. Some weeds detract from the visual experience not only by their form but by the environments that allow them to thrive, such as disturbed areas. Weeds can also detract from visual quality during winter when their bare stalks stand out from the surrounding landscape or by establishing a monoculture which can be visually undesirable.

ECONOMIC EFFECTS

Most economic impacts reported from noxious weeds on rangeland have been based on a reduction in livestock carrying capacity. Because of nutritional quality, season of growth, and palatability, most noxious range weeds have less forage value than the native plants they displace (Lacey and Olson, in press). French and Lacey (1983) calculated that spotted knapweed invasion costs Montana's range livestock industry approximately $4.5 million annually in forage loss. If spotted knapweed infested all susceptible sites in the state, the potential annual loss could reach $155 million (Bucher 1984). Similar reductions in forage may result from monocultures of other unpalatable noxious weeds, such as sulfur cinquefoil. The threat of spotted knapweed Infesting additional acreage and reducing forage was considered in an economic evaluation of controlling the weed in western Montana (Griffith and Lacey 1991).

Leafy spurge also has been recognized as causing a serious economic impact in Montana. The weed can reduce cattle carrying capacity by 50% to 75% (Alley *et al.* 1984), resulting in an estimated forage loss to the cattle industry In Montana of $2.2 million. Direct economic impacts (value of lost AUM's and expenditure reductions) of leafy spurge infestations on Montana grazing lands in 1990 were calculated at $5.7 million. It is projected that total economic impacts from leafy spurge infestations could reach $25.6 million by 1995 if the weed is not contained or reduced (Bangsund and Leistritz 1991). Reilly and Kaufman (1979) estimated that private landowners were spending more than $2.5 million annually in an effort to control leafy spurge.

The presence of noxious weeds may also impact land values. Maddox (1979) reported that knapweed infestations reduced appraisal value of land in Oregon. In western Montana, however, the effect of noxious weeds is frequently not considered in land sales. Recent buyers are more interested in the scenic quality of the property (i.e., lakes, streams, mountains) than in the production capability of the land (Lacey and Olson, in press). However, in eastern Montana, the presence of leafy spurge on agricultural land greatly reduces land value and resale potential (Egan 1991). Potential decreases in land values from spurge infestations in Montana were estimated at $69.3 million, using a value-to-rent ratio for private grazing lands (Bangsund and Leistritz 1991).

WEED MANAGEMENT TECHNIQUES

Several different management techniques can be used to contain, control, or eradicate noxious weeds. These include the use of herbicides, cultural techniques (hand removal, cultivation, burning, reseeding), and biological methods (insects, pathogens, or grazing animals). An integrated weed management (IWM) approach involving the use of several control techniques is critical when managing extensive weed infestations that occupy a variety of ecological niches, such as riparian areas, foothills, and mountain slopes.

The weed control method or methods selected will depend on the following factors: control objectives; effectiveness of the control technique on a target species; environmental factors; land use; economics; and the extent and nature of the weed infestation (Lacey, in press). For example, small weed infestations could be eradicated by hand removal or selective use of herbicides to prevent spread to uninfested sites. Various weed management techniques are described below.

CHEMICAL WEED MANAGEMENT

Chemical control of weeds dates to the days of the Roman Empire when ashes, salt, and inorganic wastes were used to control weeds on roadbeds. Before the turn of the century, copper sulfate was one of the first selective chemicals used to control broadleaf weeds, particularly mustards, in cereal crops. Stove oil was once widely used to control weeds in carrots because carrots could tolerate the oil, while the weeds could not. Millions of pounds of inorganic salts, such as sodium chlorate, have been used in the past to sterilize soils and control deep-rooted weeds in industrial areas (Ross and Lembi 1985). Most herbicides developed since 1945 are synthetic organic compounds. By 1950, about 15 basic herbicides existed. Today there are more than 750 active pesticide ingredients, and about 25,000 formulated products of which about two thirds are herbicides. (USEPA 1991). The effectiveness of various herbicides is based on pathways by which they enter the plant and biochemical actions within the plant. Entry into the plant, can be through direct contact with above-ground foliage or uptake through the root system.

Herbicides are also categorized as selective or non-selective for a particular type of plant. Selective herbicides kill a specific type of plant, such as a broadleaf weed, whereas non-selective herbicides kill both grasses and broadleaf vegetation.

Herbicides that include the active ingredients picloram, dicamba, 2,4-D, clopyralid, and glyphosate are commonly recommended for noxious weed control in Montana (see Table 6-1, Chapter 6). In addition to active ingredients, herbicide formulations also include inert materials, such as carriers and surfactants. With the exception of glyphosate, the active ingredients listed above are auxin-type compounds that are selective for broadleaf plants, allowing grasses to continue to grow. A description of the different herbicides commonly used for noxious weed control on range and pastureland follows. More specific information can be found in Chapter 6.

- Picloram, sold under the trade name Tordon 22K, is a restricted-use pesticide and can only be purchased and applied by certified applicators. It is labeled for small grain, forestlands, rangelands, rights-of-way, and roadside weed control. Picloram is absorbed both through leaves and roots and transported upward and downward within the plant. Symptoms of the herbicide on sensitive plants includes twisting and cupping of stems and leaves. Picloram is adsorbed to both clay and organic matter; however, leaching may occur in sandy soils low in organic matter. Picloram is degraded by soil microorganisms and ultraviolet light. The length of time picloram residues remain in the soil varies according to geographic location, climatic conditions, and rate of application. Degradation is more rapid under warm, humid conditions and in soils high in organic matter (Colby *et al.* 1989). The use of picloram is restricted on soils with rapid to very rapid permeability and a shallow water table.

- Dicamba is sold under the trade name of Banvel. It is readily absorbed by leaves and roots and easily transported within the plant. Residues of dicamba from treated plants can dissipate by exudation through the roots into the surrounding soil, and by metabolism within the plant and loss from leaf surfaces. Grass damage may occur with high rates of application. Dicamba is mobile in soil and may leach in coarse-textured soils. Dicamba is degraded by microorganisms; however, it will persist for several months in the soil. As with picloram, the length of time dicamba will persist in the soil is dependent on temperature, moisture, soil characteristics, and herbicide application rate.

- 2,4-D is an active ingredient in many products sold for large-scale weed control and for ornamental and turf use. It is absorbed by leaves, stems, and roots, and transported throughout the plant in the phloem and xylem. The herbicide accumulates in the growing points of shoots and roots. Salts of 2,4-D are more soluble than other formations and can move in some soils (Colby *et al.* 1989). 2,4-D is less persistent than picloram, dicamba, or clopyralid, and some formulations can be used closer to water. The ester formulations of 2,4-D are susceptible to drift and should not be used near sensitive non-target vegetation. Microbial breakdown of 2,4-D occurs within several weeks; therefore, annual application may be required.

- Clopyralid is sold under the trade names of Stinger, Transline and Curtail. Curtail is a mixture of 2,4-D and clopyralid, whereas Stinger is com-posed of the active ingredient clopyralid alone. The chemical is absorbed by both foliage and roots and translocates upward and downward in plants, accumulating in the active growing points (Colby *et al.* 1989). The persistence of clopyralid is similar to that of dicamba. Clopyralid is more selective than picloram, dicamba, 2,4-D, or glyphosate, and, at recommended application rates, will not harm many broadleaf forbs and trees. It is highly effective on plants in the composite family, including knapweed and thistle. The addition of 2,4-D to clopyralid will increase the spectrum of plants that are controlled. Clopyralid is not strongly adsorbed, and can leach in coarse-textured soils. Applications of this herbicide are restricted on soils with rapid to very rapid permeability and a shallow water table.

- Glyphosate is a non-selective herbicide marketed as Roundup, Rodeo, and Accord. Depending on the formulation, it can be used for crop, noncrop, forestry, and aquatic weed control. Glyphosate is absorbed by the leaves and transported throughout the plant where it disrupts photosynthesis. It is a nonselective herbicide that will kill both grass and broadleaf plants. Glyphosate adsorbs tightly to soil and its ability to leach in soils is low. Microbial breakdown is relatively slow; however, the herbicide binds so tightly to soil that it is not absorbed by plant roots. Revegetation is usually necessary following applications of glyphosate. Rodeo and Accord are labeled for use in or near water.

Application rates, measured in pounds of active ingredient (AI) per acre, vary for each herbicide or combination of herbicides depending on the target species, control objective, and environmental conditions. To assure proper application, it is essential that all guidelines and label restrictions are carefully followed. Use of many herbicides is restricted near surface water and areas with high water tables; under certain wind, temperature, and soil moisture conditions; and during some stages of plant growth. Recommended application rates for noxious weeds in Montana are shown in Table 2-2.

Various herbicide application methods can be used, depending on objectives, manpower, topographic limitations, economics, equipment availability, and potential impacts. Methods include aerial application by helicopters or airplanes; vehicle-mounted spray equipment with a boom, single broadjet, or hand-held pressure nozzles; control droplet applicators (CDAs) on singular- or multiple-head booms for vehicles or handheld units; and backpack sprayers, hand-held pressure nozzles, or hand-held CDAs which allow individual plant treatment.

BIOLOGICAL WEED MANAGEMENT

Biological weed management involves the use of living organisms, such as grazing animals, insects, and pathogens, to control weeds. The objective of biological weed control is not the eradication of weeds, but the reduction and long-term stabilization of weed density at a sub-economic level.

TABLE 2-2

HERBICIDES COMMONLY RECOMMENDED FOR CONTROL OF CATEGORY 1 AND 2 NOXIOUS WEEDS ON RANGE AND PASTURE

CATEGORY 1 WEEDS	HERBICIDE	APPLICATION RATE PRODUCT PER ACRE	APPLICATION TIMING
Leafy spurge	Tordon 22K Banvel 2,4-D Roundup	1-3 quarts 2-4 quarts 1-2 quarts 1-2 quarts*	Full flower; fall *Fall
Canada thistle	Tordon 22K +2,4-D Stinger Curtail Banvel 2,4-D	1 +1 quart 2/3-1 pint 2-4 quarts 1-2 quarts 1-2 quarts	After emergence to bud; fall
Whitetop	Banvel 2,4-D	2 quarts 2-3 quarts	Early bud; fall rosettes
Field bindweed	Tordon 22K Tordon +2,4-D Banvel 2,4-D	1 quart 5 +1 quart 1-2 quarts 1-2 quarts	Full bloom; fall; plants actively growing
Russian knapweed	Tordon 22K Stinger Curtail Banvel 2,4-D	1-2 quarts 1-1.3 pints 3-4 quarts 2-4 quarts 2-4 quarts	Bud stage; fall
Spotted & diffuse knapweed	Tordon 22K Stinger Curtail Banvel +2,4-D 2,4-D	1 pint 2.3 pints 2 quarts .5 +1 quart 1-2 quarts	Bolt, fall
Dalmatian toadflax	Tordon 22K Banvel Roundup 2,4-D	2-3 quarts 4 quarts 3-4 quarts 2-4 quarts	Bud to mid-flower
St. Johnswort	Tordon 22 K 2,4-D	1 quart 1-2 quarts	Early bud
CATEGORY 2 WEEDS	**HERBICIDE**	**APPLICATION RATE PRODUCT PER ACRE**	**APPLICATION TIMING**
Dyers woad	Ally +2,4-D	.5 oz +1 quart +surfactant	Rosette stage
Purple loosestrife	2,4-D Rodeo	.5-1% solution 1-2 quarts	Before seed shatter when actively growing Late flower
Sulfur cinquefoil	Tordon 22K Tordon +2,4-D Banvel +2,4-D Ally	1 pint 1 pint +1 quart .5 +1 quart .5 oz +surfactant	Bolt to early bud

Sources:

Lacey et al. 1985
Lacey, C.A. et al. 1986
Lacey and Lacey 1986
McKone, M. 1991
Montana State University Agricultural Experiment Station, Weed Control Research 1985 to 1990

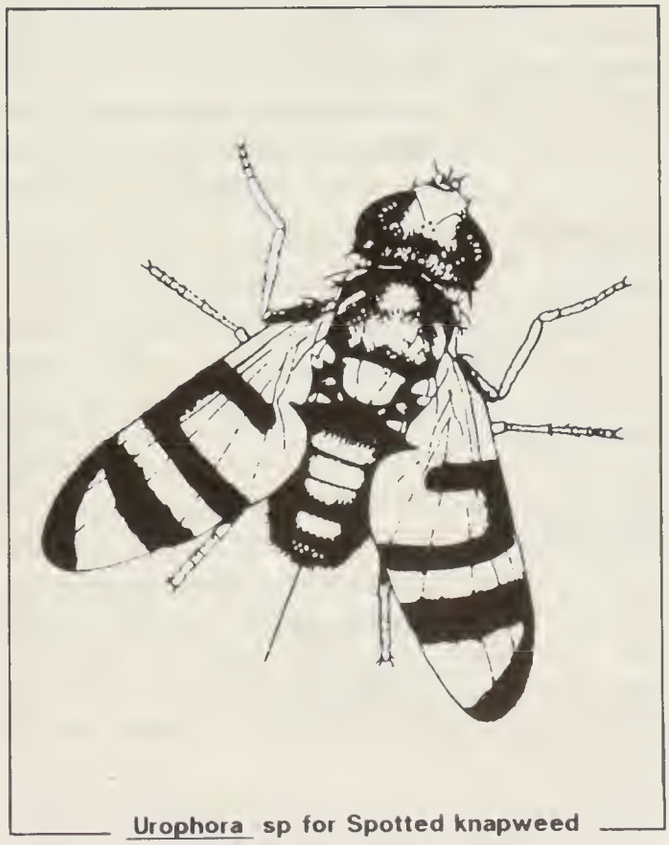
Biological weed control often attempts to recreate a natural balance of plant species and predators. Because many plants identified as "noxious weeds" are not native to North America, they have few established natural predators in Montana. Therefore, insects and diseases must be imported from regions where the weeds occur naturally. Insects have dominated biocontrol programs, but other agents, such as fungi and nematodes, are receiving increased consideration.

Aphthona sp on Leafy spurge

Biocontrol programs with insects or pathogens may be a relatively slow process, often taking 10 to 15 years before reductions in weed density are evident (Story 1984). Harris (1979) reported that the cost of controlling a weed biologically in Canada ranged from $1.2 to $1.5 million. However, successful biocontrol programs with insects have the potential to be cost-effective, since they are pest-specific, permanent, and applicable over large areas with little or no additional expense (Hansen 1991). The first large-scale biological weed control program was tested in Hawaii in 1902, where a series of insects was released to control the exotic shrub *Lantana camara*. By the 1980's, biological control programs utilizing introduced plant-eating insects or pathogenic fungi had been used on more than 80 weed species throughout the world. About 35% of these projects have been at least partially successful in reducing weed-infested acreage (Hansen 1991).

In Montana, attempts to biologically control weeds began in 1948 with the introduction of two defoliating beetles to attack St. Johnswort (goatweed). To date, over two dozen insects have been established to combat at least seven noxious weed species in Montana. Table 2-3 presents the status of biocontrol agents utilized to control noxious weeds in Montana.

Several insects are well established and are expanding their populations in Montana. The seed head flies (*Urophora affinis* and *U. quadrifasciata*) are established on spotted knapweed throughout much of western Montana (Story and Noweriski 1984). Although the flies alone are not expected to reduce spotted knapweed populations, they have been reported to decrease seed production up to 95% (Story 1984). The



Urophora sp for Spotted knapweed

TABLE 2-3
BIOCONTROL AGENTS IN MONTANA

HOST PLANT SPECIES	INSECTS AND PATHOGENS					
	Scientific Name	Type	Part Attacked	Status	Date Released	Where 1st Released
Canada thistle	Ceutorhynchus liture	Weevil	Stems/roots	Established	1972	MT
	Urophora cardui	Tephritid Fly	Stems	Established	1985	OR
Diffuse knapweed	Aceria centaureae	Mite	Leaves	Quarantine	N/R	N/R
	Bangasternus fausti	Weevil	Seed head	Established	1990	OR
	Metzneria paucipunctella	Moth	Seed head	Established	1975	MT
	Pelochrista medullana	Moth	Root	N/R	1984	N/R
	Pterolonche inspersa	Moth	Root	N/R	1986	N/R
	Puccinia jaceae	Fungus	Leaves	Native	N/R	N/R
	Sclerotinia sclerotiorum	Fungus	Crown	Native	N/R	N/R
	Sphenoptera jugoslavica	Beetle	Roots	Established	1981	OR
	Urophora affinis	Tephritid Fly	Seed head	Established	1973	MT
	Urophora quadrifasciata	Tephritid Fly	Seed head	Established	1988	MT
Field bindweed	Aceria malherbe	Mite	Leaves	Established	1990?	TX, NJ
Leafy spurge	Aphthona abdominalis	Flea Beetle	Roots/leaves	HST/Quarantine	1991?	(Rome)
	Aphthona cyparissiae	Flea Beetle	Roots/leaves	Established	1987	MT, ND
	Aphthona czwalinae	Flea Beetle	Roots/leaves	Established	1987	ND
	Aphthona flava	Flea Beetle	Roots/leaves	Established	1985	MT, ND
	Aphthona nigriscutis	Flea Beetle	Roots/leaves	Established	1989	MT, ND, ID
	Chamaesphecia crassicornis	Clear Winged Moth	Roots	HST/Quarantine	1992?	MT
	Chamaesphecia empiformis	Clear Winged Moth	Roots	Not Established	N/R	CA
	Hyles euphorbiae	Moth	Leaves/flowers	Established	1966	MT
	Oberea erythrocephala	Beetle	Stems/roots	Established	1982	MT
	Oxicesta geographica	Moth	Leaves/flowers	HST/Quarantine	N/R	MT
	Simyra dentinosa	Moth	Leaves/flowers	HST/Quarantine	N/R	MT
	Spurgia esulae	Fly	Growing tips	Established	1985	MT, ND
Purple loosestrife	Galerucella calmariensis	Weevil	N/R	HST/Quarantine	N/R	N/R
	Galerucella pusila	Weevil	N/R	HST/Quarantine	N/R	N/R
	Hylobius transversovittatus	Beetle	N/R	HST/Quarantine	N/R	N/R
Spotted knapweed	Agapeta zoegana	Moth	Roots	Established	N/R	MT
	Bangasternus fausti	Weevil	Seed head	Established	N/R	MT
	Cyphocleonus achates	Weevil	Roots	Established	1988	MT
	Metzneria paucipunctella	Moth	Seed head	Established	1975	MT
	Sclerotinia sclerotiotum	Fungus	Crown	Native	N/R	MT
	Urophora affinis	Tephritid Fly	Seed head	Established	1973	MT
	Urophora quadrifasciata	Tephritid Fly	Seed head	Established	1988	MT
St. Johnswort	Agrilis hyperici	Beetle	Roots	Established	1940s	CA
	Aplocera plagiata	Moth	Leaves/flowers	Established	1989	MT
	Chrysolina hyperici	Beetle	Leaves/flowers	Established	1940s	CA
	Chrysolina quadrigemini	Beetle	Leaves/flowers	Established	1940s	CA
	Zeuxidiplosis giardi	Fly	Leaves	Established	N/R	CA, HI

HST = Host Specifity Testing
N/R = Non Reported

Revised March 21, 1991

Source: USDA/ARS
Rangeland Weed Laboratory
Biological Control of Weeds Research Unit
Montana State University, Bozeman, MT 59717

hawkmoth (*Hyles euphorbiae*) on leafy spurge, *Chrysolina* beetle on St. Johnswort, and *Rhinocyllus conicus* on musk thistle are other insects that are well established and expanding their populations. The spurge hawkmoth and *Chrysolina* beetle have had limited Impact on host plants in Montana. Other insects are currently established in extremely low numbers or in experimental stages in the state (Noweriski 1991; Story 1991).

The relative scarcity of biological control agents effective against noxious weeds has limited their use in weed management programs. Until these agents are readily available for release and have proven their ability to or reduce weed populations, land managers must rely on cultural or chemical control techniques and/or grazing animals to effectively manage most noxious weed infestations.

Managing livestock to utilize a target weed has proven successful in several areas in Montana. Grazing animals will not eradicate a weed, but with proper timing they can decrease weed density and limit spread by reducing seed production. A good example is the use of sheep for controlling leafy spurge (Landgraf *et al.* 1984; Lacey *et al.* 1984; Aderhold 1984). Sheep and cattle have also been managed under intensive grazing systems to utilize spotted knapweed (Cox 1983; Robbins 1989). In Stillwater County, goats have been used at fishing access sites to stop seed production of leafy spurge. The economic feasibility of grazing certain kinds of animals may be limited by predator management restrictions.

MECHANICAL AND CULTURAL WEED MANAGEMENT

Historically, manual and mechanical methods were the most common weed control techniques used. These methods involve physically destroying the weed or interfering with reproduction by pulling, digging, or cutting. Although these methods are effective on annuals or tap-rooted species, such as spotted knapweed, they are not effective on deep rooted perennials, such as leafy spurge and Canada thistle. Generally, hand removal is effective in areas of initial colonization when native species are present to fill the niches. It is not recommended on high-density infestations.

Cultivation by mechanical methods is effective on most tap-rooted and annual weed species, generally in a cropland situation. Cultivation stimulates germination of weed seeds by bringing them to the soil surface, where resultant weed seedlings can be easily controlled with a second tilling. Although cultivation is most effective on annual weeds, some perennials can be effectively controlled by repeated tilling throughout the growing season for several years.

Mowing can reduce seed production of some weed species. The timing and frequency of mowing necessary to reduce seed production will vary with each species. For example, Popova (1960) reported an increase in density of diffuse knapweed when mowed. However, Davis (1991) noted a decrease in seed production of spotted knapweed when mowed at the late bud to early bloom growth stage. Response of a plant to mowing may vary with environmental conditions, especially moisture that follows the mowing event. Mowing may weaken some non-target species in treated areas, while rhizomatous grasses may be benefitted.

Prescribed burning has been used for control of several shrub and tree species. However, burning has little effect on most annual and herbaceous species (including noxious weeds) and has actually been reported to cause an increase in diffuse knapweed (Popova 1960). Moderate and low intensity fire has not been observed to kill noxious weed seeds.

Cultural methods of weed control that enhance the growth of desired vegetation may help slow invasion onto a site. Since noxious weeds are typically opportunistic pioneers of open sites, any practice that favors the retention or introduction of desirable plants that can dominate or outcompete weeds can serve as a control. Examples include seeding competitive grasses and legumes, crop rotation, fertilization, use of mulches, irrigation, and implementation of grazing systems to increase the competitive ability of native species. On forested sites, improving brush and tree canopy cover along roadsides can reduce weed density and slow invasion (Losensky 1987). Disturbed areas, such as roadsides, construction sites, and areas denuded by wildfire, can be seeded immediately with fast-growing grasses and legumes to reduce the potential for noxious weed invasion.

PREVENTIVE WEED MANAGEMENT

The objective of preventive weed management is to stop the introduction of weed seed and plant parts into non-infested sites. Since established weeds are often persistent and costly to manage, prevention is the most practical and cost-effective method of control. Preventive measures include: the use of weed seed-free hay; eradication of newly established infestations; the use of clean seed; cleaning tillage and harvest equipment before moving it to a non-infested area; keeping irrigation ditches, fence rows, roadsides, and other non-crop areas free from weeds; keeping weed-infested soil, straw, or manure out of non-infested areas; reseeding after a disturbance; and not allowing newly established weeds to set seed.

Noxious weed prevention and control has been addressed in range allotment management plans and special use permits issued by land management agencies. Some guidelines for preventing the movement of weeds on rangeland include monitoring livestock grazing and range condition to avoid over-utilization of native species. Livestock that are moved from a weed-infested pasture should be confined to a small area for several days to allow weed seed to pass through the animal and prevent the introduction of seed into a pasture free of noxious weeds. Herding and placement of salt can be used to a limited extent to keep livestock out of weed infestations.

Motor vehicles have been identified as a major distributor of noxious weed seeds, especially spotted knapweed (Trunkle and Fay 1991). Restriction of off-road travel and road closures may prevent movement of weeds into non-infested areas. Tires and undercarriages of vehicles and field equipment should be cleaned regularly and kept free of weed debris to avoid transportation of seeds. Weeds should be controlled in parking areas, equipment yards, stock yards, road turnouts, and other areas frequented by vehicles to prevent movement of seed to new sites. Gravel pits and other sources of construction materials should be free of noxious weeds or quarantined to avoid seed transport.

EDUCATION

The key to controlling noxious weeds in Montana is early detection and treatment. Public awareness programs on weeds improve detection of invading weed species and increase public support for county, state, and federal weed management programs. Tours, meetings, printed bulletins, radio and television announcements, youth "weed bounty" programs, and other media techniques have been used for increasing awareness about noxious weeds.

Many groups, including Montana State University Cooperative Extension Service (CES), MDA, and the Montana Weed Control Association (MWCA), have been actively involved in educating the public about noxious weeds. Informational goals include: increasing the general public's awareness of noxious weeds; communicating weed research results; and providing training on weed biology, ecology, and weed management techniques. County weed boards and extension service personnel have been instrumental in organizing and promoting public education programs at the local level. Cooperative weed management projects that receive funding from the NWTF must include educational programs as part of their integrated weed management approach.

The Montana Weed Control Association was formed in 1958 to promote weed research, education, and legislation concerning noxious weeds. The organization has a wide variety of membership and has been actively involved in establishing a statewide training program for weed supervisors, developing and disseminating weed science knowledge, coordinating cooperative weed control programs at all levels, and informing the general public about the magnitude and impact of weed problems in the state. The association also publishes a newsletter that reports on NWTF projects.

INTEGRATED WEED MANAGEMENT

Integrated weed management (IWM) is a comprehensive approach to achieving economical weed control in an environmentally acceptable manner. Components include: education, prevention, and early detection; cultural, manual, and mechanical control; biological control; and chemical control. Each of the components may be used separately or enhanced by combining with other methods to produce a more effective strategy. An example of integrated weed management is the use of sheep and herbicides to manage large infestations of

leafy spurge. Sheep are used within the leafy spurge infestation to stop seed production and herbicides are used on the perimeter to contain the lateral spread of the plant. Other examples include the use of crop rotations and herbicides to control Canada thistle and annual weeds within cultivated areas; and integrating insects, grazing animals, herbicide treatment and reseeding competitive species, to manage large-scale spotted knapweed infestations.

Follow-up management is an important component of any integrated weed management program, especially on range and pasture sites. The degree of follow-up management will determine the longevity of control obtained with chemical, biological, or cultural weed control methods. Because most noxious weeds have persistent and tenacious growth characteristics and seeds that remain viable for years, long-term control programs must be implemented. These include re-treatment with herbicides or continued cultural, mechanical, or biological management practices to maintain low weed populations. Range improvements, such as grazing systems, cross fencing, and water developments to facilitate a more competitive plant community, will retard the reinvasion of many weed species. Sites that are devoid of desirable species should be reseeded to competitive plant species as a part of the total management program.

MONTANA WEED MANAGEMENT PROGRAMS

Thousands of acres of noxious weeds infesting Montana range and timber land are managed annually with herbicides, biocontrol agents, and cultural and mechanical methods. Weed management plans by local, state, and federal agencies often employ an integrated approach that includes education and prevention programs in addition to various control methods. Federal agencies such as the Bureau of Land Management, Bureau of Indian Affairs and individual National Forests have completed weed management EIS's for their respective programs.

Cooperative projects supported by the NWTF identify the importance of federal, state, and local entities working together to manage noxious weeds within contiguous lands. County weed district personnel and private landowners within these groups are instrumental in working with many state and federal agencies to initiate or improve weed management programs. Weed management programs for county, state, and federal entities and private corporations are described below.

COUNTY WEED DISTRICTS

Each county in Montana has a weed control district comprised of a weed board appointed by the county commissioners. A county weed supervisor may be hired by the Board to act as an advisor and manager for weed control projects in the district and to implement the county weed management plan. Responsibilities include: identifying, mapping, and evaluating specific weed infestations in the county; managing biological, cultural, and chemical control programs; and coordinating control efforts between private, county, state, and federal land managers. In addition, weed control districts help initiate and coordinate NWTF grant projects, and conduct training and educational programs.

Sulfur cinquefoil

Most county weed districts are funded through a county mill levy. Table 2-4 contains the county weed budgets for FY 1991. Counties with larger populations generally have the greatest funding available to conduct weed management programs. These counties can support a full-time weed supervisor and additional summer staff, whereas smaller counties with less funding may depend on part-time supervisors and limited staff. Figure 2-2 shows the employment status of weed supervisors in each county. Passage of Initiative 105, which froze mill levies at 1986 levels, has forced weed supervisors to balance escalating costs with fixed budgets. The total budget for county weed control programs in Montana is $4.3 million.

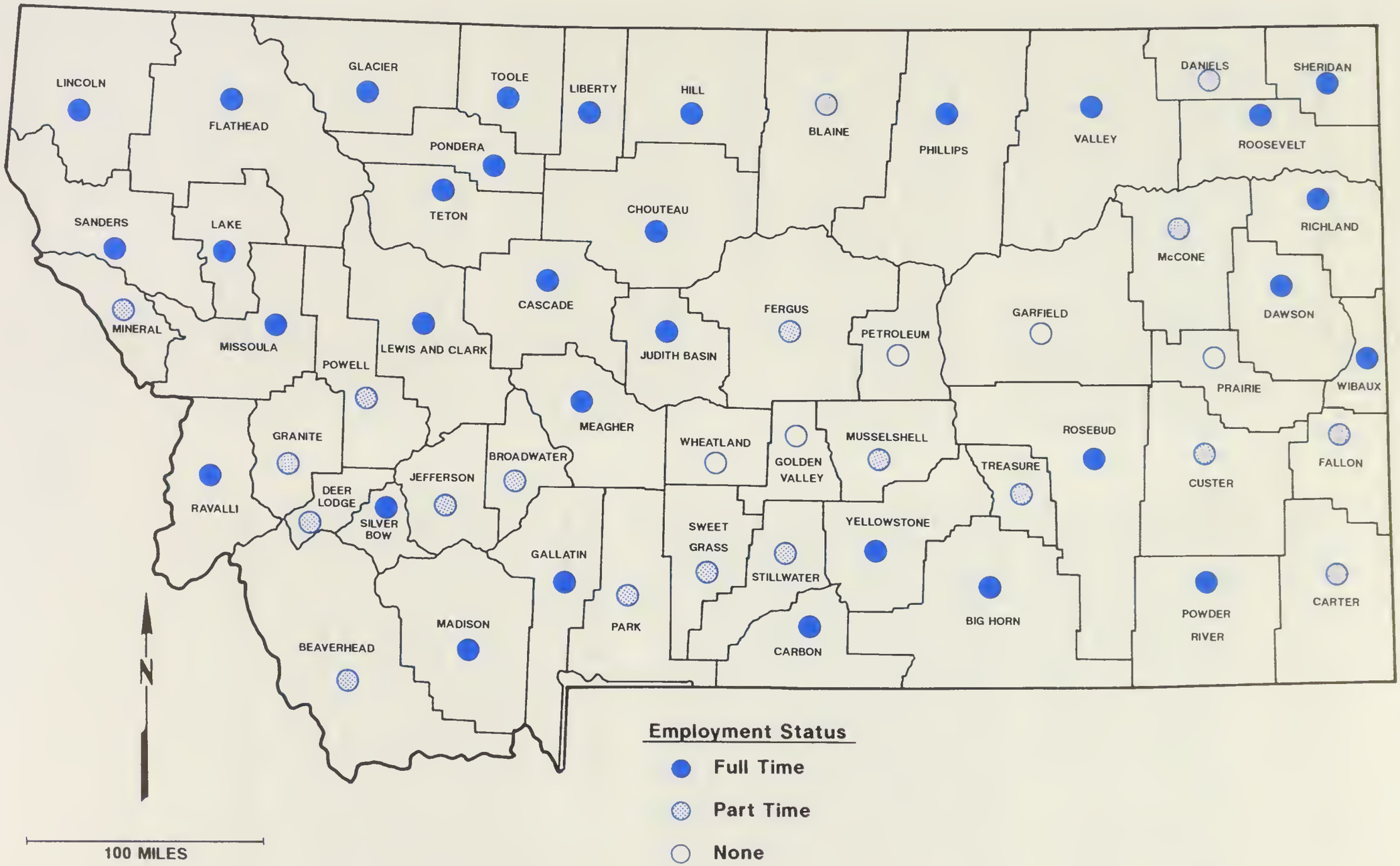
Noxious weed control programs vary considerably among counties because of differences in funding. Some counties with limited funds are restricted to a roadside weed control program on county and state rights-of-way. Larger counties, such as Cascade, Gallatin, and Flathead, have comprehensive programs that include education, weed mapping, collection and redistribution of biological control agents, and coordination of weed control programs among private, state, and federal land managers.

TABLE 2-4

FY 1991 COUNTY WEED FUND BUDGETS

COUNTY	WEED BUDGET	COUNTY	WEED BUDGET	COUNTY	WEED BUDGET
Beaverhead	$114,738	Granite	$ 31,124	Powell	$ 52,875
Big Horn	$522,453	Hill	$ 72,333	Prairie	$ 36,399
Blaine	$ 66,750	Jefferson	$105,301	Ravalli	$ 65,090
Broadwater	$	Judith Basin	$ 30,330	Richland	$ 65,663
Carbon	$128,150	Lake	$135,500	Roosevelt	$111,100
Carter	$ 83,000	Lewis & Clark	$228,326	Rosebud	$ 128,008
Cascade	$319,812	Liberty	$ 35,025	Sanders	$164,800
Chouteau	$ 69,700	Lincoln	$ 68,274	Sheridan	$ 77,870
Custer	$ 28,956	Madison	$100,473	Silver Bow	$ 82,372
Daniels	$ 13,578	McCone	$ 32,805	Stillwater	$109,491
Dawson	$ 32,200	Meagher	$ 52,974	Sweet Grass	$ 41,000
Deer Lodge	$ 40,650	Mineral	$ 29,948	Teton	$114,433
Fallon	$117,232	Missoula	$233,405	Toole	$ 90,112
Fergus	$ 82,750	Musselshell	$ 23,260	Treasure	$ 22,682
Flathead	$ 247,838	Park	$ 81,760	Valley	$ 64,800
Gallatin	$141,696	Petroleum	$ 18,000	Wheatland	$ 38,600
Garfield	$ 11,700	Phillips	$ 59,095	Wibaux	$ 31,979
Glacier	$130,900	Pondera	$ 85,636	Yellowstone	$200,509
Golden Valley	$ 36,260	Powder River	$ 57,612		

Source: Montana Association of Counties



Montana County Weed Supervisor
Employment Status
NWTF-Programmatic EIS
FIGURE 2-2

MONTANA DEPARTMENT OF STATE LANDS

The Department of State Lands (DSL) is responsible for management of 5.2 milllon acres of school trust lands. The control of noxious weeds on school trust lands is the responsibility of the surface lessee. Weed control is a condition of the lease and the lease can be canceled if the lessee does not adequately meet this requirement. Leases are generally issued and/or reviewed at 10-year intervals and lessees are encouraged to cooperate with local weed control supervisors during the lease period.

The DSL has a budget of $20,000 for the control of noxious weeds on vacant or non-leased land. These funds are channeled into local weed control districts for weed management on vacant parcels. The department has begun a program of biological control on selected tracts using sheep to control leafy spurge (Hagener 1991).

MONTANA DEPARTMENT OF TRANSPORTATION

Montana's 1,250 miles of interstate highways, 5,455 miles of primary roads, 4,641 miles of secondary roads, and 66,259 miles of local and off-system roads provide a web of corridors for the spread of noxious weeds. State and county road rights-of-way and median areas have a high potential for initial weed infestations, as do all new road construction projects.

The Montana Department of Transportation (MDOT) has a noxious weed control policy, but generally contracts with local applicators or county weed control districts for management and control of weeds along rights-of-way. The MDOT compensates county weed control boards for labor, materials, and equipment rental. Herbicide application is the primary method of weed control, with some mechanical means employed in sensitive areas. The 1991 budget for weed control by the MDOT is $1.4 million (Wiley 1991).

MONTANA DEPARTMENT OF FISH, WILDLIFE, AND PARKS

The Montana Department of Fish, Wildlife, and Parks (MDFWP) maintains a multi-faceted approach in addressing noxious weed management, both on properties it manages for public benefit and as an advisor to others in noxious weed issues. The MDFWP manages 534 sites totaling 431,873 acres; these areas include fishing access sites, state parks, monuments, recreation areas, and wildlife management areas.

The MDFWP has practiced some form of noxious weed management since it purchased the Red Rock Wildlife Management Area in 1916. A formal noxious weed policy was adopted in 1983 with the primary objective of improving cover of native species on MDFWP lands and preserving the soil and its water-holding capacity. Other components of the weed management plan include coordinating control efforts with local weed boards and adjacent landowners, identifying and preventing the spread of noxious weeds through a public education program, and documenting and evaluating the effectiveness of control measures. The MDFWP spends approximately $71,000 annually on weed control efforts (Knapp 1991).

U.S. BUREAU OF LAND MANAGEMENT

The U.S. Department of the Interior, Bureau of Land Management (BLM), is responsible for the administration of 8.1 million acres in Montana, of which approximately 100,000 acres are infested with noxious weeds (Penfold 1991). The BLM has adopted an integrated approach utilizing chemical, mechanical, manual, and biological methods to annually treat about 15,000 acres of weed infestations in Montana. The 1991 weed control budget is $329,000 (Moorehouse 1991).

Educational efforts are coordinated with those of county, state, and other federal agencies to assist

the public in noxious weed identification, prevention, early detection, and proper management techniques. The BLM has cooperated with the Montana State University Extension Service and the USDA, Agricultural Research Service in developing weed control recommendations and in selecting sites for testing biological agents on public land.

U.S. BUREAU OF INDIAN AFFAIRS

The U.S. Department of the Interior, Bureau of Indian Affairs (BIA), as trustee, is responsible for administration of 5.7 million acres of trust lands in Montana, of which approximately 180,000 acres are infested with noxious weeds. Prior to 1988, weed control efforts were sporadic and ineffective due to inconsistent funding. Since then, additional funding has provided the ability to develop and expand baseline data inventories, map weed infestations, and document, evaluate, and monitor weed control projects. This information is currently being converted to a computerized Geographic Information System base.

The BIA employs an integrated weed management approach in treating weed infestations on trust lands. In 1991, the agency will spend $578,700 to treat approximately 23,000 acres.

U.S. BUREAU OF RECLAMATION

The U.S. Department of Interior, Bureau of Reclamation, Montana Projects Office, is responsible for administering 13 federal water projects in Montana. Associated with these are 11 dams and reservoirs, 9 diversion dams, 10 pumping plants and 2 powerplants providing a variety of benefits including flood control, irrigation, fish and wildlife, recreation and power production.

Lands adjacent to these facilities include 109,574 acres of acquired lands and 144,706 acres withdrawn for project purposes. There are also 18,780 acres carrying easement rights. Weed mapping indicates approximately 3 percent or 7,600 acres have some level of infestation by noxious weeds. Weeds are disseminated on these lands primarily through water and vehicular sources. Weeds are concentrated and prolific at some locations and entirely absent from others.

Depending on funding, Reclamation expends between $30,000 and $50,000 for weed control per year. Management activities include spraying and the use of sheep and goats at Tiber and Clark Canyon Reservoirs. Experimental use of several insects as biological control agents has also been supported and provided for on Reclamation land.

NATIONAL PARK SERVICE GLACIER NATIONAL PARK

The U.S. Department of the Interior, National Park Service has proposed a 5-year plan for managing exotic plant species within Glacier National Park (GNP). The goal is to preserve biological diversity of native flora by containing and/or controlling undesirable exotic plant species. The plan proposes an integrated approach that will include inventorying and mapping selected exotic plant species, determining the effects of exotic plants on the biological community, educating the public to prevent introduction and spread of exotic species, and reducing the number, density, and area of aggressive exotics (Lange 1991).

The Federal Noxious Weed Act (P.L. 93-629, Sec. 15) as amended by the 1990 Farm Bill allows GNP to enter into cooperative agreements with surrounding counties for the control of noxious weeds. As a result, GNP has signed an agreement with Glacier County for the control of noxious weeds in the lower St. Mary Valley on the east side of the park. GNP's 1991 budget for weed control is approximately $25,000 (Lange 1991).

NATIONAL PARK SERVICE YELLOWSTONE NATIONAL PARK

The goal for managing noxious weeds within Yellowstone National Park (YNP) is similar to that for Glacier Park. An integrated approach is currently being used to control and eliminate spotted knapweed and nineteen other high priority species within YNP. Park staff began managing noxious weeds in the park in the late 1960's, however, it was not until the completion of the park's Exotic Weed Management Plan in 1986 that a comprehensive and directed approach began for noxious weed managment. Current efforts involve inventorying infestations (135

species of exotic plants have been located in the park) followed by mechanical and chemical control. Staff and volunteers from all divisions in the park have assisted with control efforts, but primary responsibility rests with the Resource Management and Visitor Protection Division. Although the park has requested special funding to support weed management efforts, there has been no revenue directed specifically for weed management to date (McClure 1992).

U.S. FISH AND WILDLIFE SERVICE

The U.S. Department of the Interior, Fish and Wildlife Service (USFWS) manages 1.12 million acres of national wildlife refuges, 34,000 acres of waterfowl production areas, and 23,000 acres of wetlands under protective easements in Montana. USFWS policy requires each station to control state-listed noxious weeds. The manager of each station is responsible for determining the level of control based on the density of infestation, impact to the habitat, and other local conditions.

The use of herbicides to control weeds is discouraged, and chemicals proven harmful to wildlife, wetlands, and ground water are normally prohibited. In 1986, the USFWS applied 1,888 pounds of herbicidal active ingredients (AI) to its lands in Montana at a cost of $13,800. In 1989, 1,107 pounds AI of herbicides were used at a cost of $8,100 (Hultman 1991).

U.S. FOREST SERVICE

Ten national forests in Montana encompass approximately 17 million acres with 350,000 infested with noxious weeds. Forest supervisors are responsible for planning, coordinating, and implementing noxious weed programs in areas where cooperative efforts with local weed districts are underway. These programs include: inventorying and mapping to determine the type, density, and extent of weed infestations; determining weed control methods; coordinating program implementation with the local weed district; and monitoring projects to assess response.

The U.S. Department of Agriculture, Forest Service (USFS), requires the use of certified seed and mulch for revegetation of disturbed areas, such as logging roads, drill pads, and rights-of-way, and allows only weed-free hay, mulch, or other farm products to be fed, used, or transported onto some forest lands. The USFS 1991 budget for weed control in Montana forests is approximately $658,000 (Hall, G. 1991).

PRIVATE ORGANIZATIONS

It is difficult to estimate the total revenue expended by private individuals, corporations, and organizations for noxious weed control in Montana. There is no reference available regarding funds allocated by this sector to biological, cultural, or mechanical weed control methods. Based on 1990 estimated herbicide sales for rangeland and non-crop weed control ($4.9 million), and an average application cost of 2.35 times the cost of herbicide, it is estimated that the private sector contributes over $11 million annually to the chemical control of noxious weeds in Montana.

Private timber and grazing lands are often interspersed among other state and/or federal lands, making cost-effective weed management difficult. In some cases the wood products industry has a cost-share program or provides in-kind services with adjoining landowners for weed control. Utilities generally employ the same control methods as adjoining landowners for control of noxious weeds on transmission and natural gas line rights-of-way. This may entail cost-share, in-kind services, or contracts with local weed control districts. Although herbicide use is predominant, some organizations are also encouraging increased use of cultural or biocontrol methods.

DESCRIPTION OF THE NOXIOUS WEED TRUST FUND GRANTS PROGRAM

Chapter 3

Noxious Weed Trust Fund

Programmatic Environmental Impact Statement

CHAPTER 3

DESCRIPTION OF THE NOXIOUS WEED TRUST FUND GRANTS PROGRAM

DESCRIPTION OF THE NWTF GRANTS PROGRAM

Noxious weeds are having a substantial impact on the agriculture, environment, and economy of Montana. Weeds have reduced crop yields, displaced native vegetation on range and woodland sites, decreased livestock carrying capacity, and degraded wildlife habitat. During the early 1980's it was recognized that the rapid spread of noxious weeds, large acreages infested, and movement of weeds between various private, state, and federal land ownerships required a coordinated weed management effort.

In 1985, the Montana legislature created the Noxious Weed Trust Fund (NWTF) grants program to assist counties, cooperative weed management groups, researchers, and educators in solving the weed problem in Montana. The program was developed to help coordinate and promote the management of large infestations of noxious weeds and prevent their establishment in new areas. Funds are allocated on a cost-share basis to various types of projects including: on-the-ground cooperative weed management projects; screening, collection, and redistribution of biological control agents; noxious weed research (chemical, mechanical, cultural, and biological); and educational programs.

Initial funding for the NWTF grants program came from a one-time grant of $1 million from the Resource Indemnity Trust (RIT). In addition, a 1% surcharge was levied on the retail sale of herbicides, to be paid by companies registering and selling herbicides in Montana. In 1987, the legislature approved a $0.50 weed fee on motor vehicles registered in Montana to be deposited in the NWTF. The amount was increased to $1.50 per vehicle by the 1989 legislature. Proceeds from the vehicle fee were used for noxious weed grants, with 25% of the revenue mandated for research and development of non-chemical noxious weed control methods. Table 3-1 presents the 1990 vehicle license fee contributions to the NWTF from each Montana county. The 1987, 1989, and 1991 legislative sessions also provided additional funds totaling $450,000 for biological control efforts from special oil overcharge monies ("stripper-well funds") paid to the state by U.S. oil companies. In 1991, the NWTF Act was amended to include research and educational programs involving cropland weed problems.

A permanent trust fund was established utilizing half of the original RIT grant monies and annual contributions comprised of half the herbicide surcharge and interest from all revenue sources. The money in trust may not be expended until the principal reaches $2.5 million, except in the case of a noxious weed emergency. The 1991 legislature placed a "sunset" on the 1% surcharge on herbicides when the trust fund reaches $2.5 million. On June 30, 1990, the permanent trust fund contained $1.6 million. Based on projected revenues and interest, the surcharge will be collected through December 31, 1992 (MDA 1990a), after which all interest generated by the permanent trust will be used for the grants program. The trust interest, combined with vehicle weed fees, will generate approximately $1.4 million annually for NWTF grants and program administration after 1992.

The MDA has prepared project guidelines to assist applicants in writing grant proposals (Appendix C, DPEIS). A standard format for grant applications is also outlined and requires the completion of three forms: Grant Program Application (NW1001); Budget Detail (NW1002); and Environmental Action Checklist (NW1003), where appropriate. Project expenditures are typically on a cost-share basis with local or state

TABLE 3-1

VEHICLE LICENSE FEES CONTRIBUTED TO NWTF JULY 1989 THROUGH JUNE 1990

COUNTY	VEHICLE FEE	COUNTY	VEHICLE FEE	COUNTY	VEHICLE FEE
Beaverhead	$ 11,888.77	Granite	$ 4,195.58	Powell	$ 8,528.31
Big Horn	$ 13,513.65	Hill	$ 24,744.68	Prairie	$ 2,588.41
Blaine	$ 9,501.46	Jefferson	$ 12,121.80	Ravalli	$ 36,384.36
Broadwater	$ 5,611.51	Judith Basin	$ 4,881.99	Richland	$ 17,200.41
Carbon	$ 13,770.50	Lake	$ 29,492.96	Roosevelt	$ 10,863.48
Carter	$ 2,485.92	Lewis & Clark	$ 65,382.97	Rosebud	$ 13,107.10
Cascade	$ 93,700.55	Liberty	$ 4,427.60	Sanders	$ 13,344.65
Chouteau	$ 11,783.65	Lincoln	$ 25,141.19	Sheridan	$ 8,919.59
Custer	$ 16,245.53	Madison	$ 9,969.31	Silver Bow	$ 44,788.41
Daniels	$ 4,263.64	McCone	$ 4,829.56	Stillwater	$ 10,651.22
Dawson	$ 14,571.35	Meagher	$ 3,212.62	Sweet Grass	$ 5,182.02
Deer Lodge	$ 12,954.28	Mineral	$ 4,584.38	Teton	$ 11,708.72
Fallon	$ 5,562.63	Missoula	$101,730.75	Toole	$ 9,063.77
Fergus	$ 18,842.68	Musselshell	$ 6,910.38	Treasure	$ 1,830.83
Flathead	$ 84,477.37	Park	$ 21,299.87	Valley	$ 13,370.94
Gallatin	$ 66,086.23	Petroleum	$ 1,172.11	Wheatland	$ 3,266.63
Garfield	$ 2,705.74	Phillips	$ 7,897.90	Wibaux	$ 2,128.35
Glacier	$ 14,083.40	Pondera	$ 10,726.52	Yellowstone	$145,199.52
Golden Valley	$ 1,558.74	Powder River	$ 4,270.44	Fleet Vehicle	$ 3,016.50

Source: Montana Department of Agriculture, ABSD

organizations, whether public or private. Grants may be issued without matching funds to weed control districts to eradicate or contain noxious weeds newly introduced to the county. Co-operative group projects that are submitted for funding must be sponsored by a county weed district or other government entity. In most cases, projects are eligible to receive funds only if the sponsoring county has funded its own weed management program with a levy in an amount not less than 1.6 mills (or an equivalent amount from another source), or in an amount not less than $100,000 for first class counties (counties having a taxable valuation of $50 million or more).

Cooperative group projects must also meet various criteria prior to being considered for funding, including:

- One year of planning, organization, and/or implementation prior to application.
- Documentation of landowner cooperation.
- Project area mapping, including: target weed infestations, areas previously treated, and areas proposed for treatment.
- Identification of a project coordinator who will keep accurate accounting of all cost-share monies.
- Identification of environmental concerns, including: an outline of weed control methods to be used, rates and timing of herbicide application, a description of the proper use of herbicides in environmentally sensitive areas, and completed Form NW1003.

- A financial narrative providing justification of project costs.

- An outline of how project evaluation will be documented.

Specific information is required from the applicant to document compliance with these criteria as well as compliance with MEPA and/or other rules governing the NWTF grants program.

Grant funding recommendations are made by a nine-member Noxious Weed Advisory Council appointed by the director of the MDA. The council is comprised of the following members:

- The director of the MDA, who serves as chairman.

- One member representing livestock production.

- One member representing agricultural crop production.

- One member from a sportsman/wildlife group.

- One member who is a herbicide dealer or applicator.

- One member from a consumer group.

- One member representing biological research and control interests.

- One member from the Montana Weed Control Association.

- One at-large member from the agricultural community.

The advisory council meets three times each year at different locations around the state to review grant requests. Applicants present their projects to the council and answer questions at that time.

The advisory council and the MDA utilize a scoring system to rank all projects in regard to how well they meet the criteria for the program (4.5.108 ARM). This project ranking worksheet is contained in Appendix C (DPEIS). Projects are selected for funding based on their feasibility and concordance with the long-range objectives of the NWTF. Projects typically demonstrate cost-effectiveness, increase weed awareness, and enhance weed management in the state. In addition, cooperative group projects should employ an integrated approach to weed management and demonstrate the effectiveness of various management techniques. Approved projects are required to be monitored and evaluated for overall effectiveness and results are reported by the sponsors and MDA personnel. Progress and fiscal reports are submitted to the department on a quarterly basis.

Administrative costs to operate the NWTF grants program have averaged 4.3% since 1985. These costs include administrative expenses incurred by the Noxious Weed Advisory Council, costs for collection of the herbicide surcharge, legislatively mandated indirect costs, and program operations. Since fiscal year 1990 the salaries of the state weed coordinator/trust fund manager and a two-thirds time program assistant have been funded through the grants program administrative budget. Responsibilities have grown with the program, and include, but are not limited to the following:

- Managing the program budget to operate within authorized parameters.

- Administering the trust fund to assure monies are distributed among established accounts.

- Monitoring county weed district and/or community group grants to evaluate the program.

- Auditing weed control grants to provide program accountability.

- Arranging meetings with the council to develop rules and evaluate the trust fund and grants program.

- Monitoring applications for weed control grants to ensure compliance.

- Coordinating federal, state, and private resources to implement effective weed management.
- Contacting local weed districts, communities, and individuals to plan and organize weed management projects.
- Disseminating information on noxious weed management.
- Contacting scientists, educators, and interested parties to coordinate weed trust fund activities.
- Cooperating with other western states to coordinate regional weed management programs.

NOXIOUS WEED TRUST FUND PROJECTS

Since its creation in 1985, the NWTF has granted more than $4.2 million for 319 projects statewide. Approximately $2.6 million (62%) has been spent on cooperative weed management projects. The remaining $1.6 million has supported non-chemical research projects (24%), other research (5%), and educational programs (9%). Appendix D (DPEIS) contains a summary report prepared on the NWTF.

In 1990, the NWTF contributed approximately $665,000 to cooperative project areas, with about $500,000 used for the purchase of herbicides in Montana. Based on total revenues generated from herbicide sales in the state of $36.8 million for 1990 and an estimate that 13.3% of those herbicides were purchased for noxious weed control (Mullin 1992), the NWTF accounts for approximately 10% of the herbicides purchased for noxious weed control in Montana. It accounts for 1.4% of the total herbicide sold in Montana. Table 3-2 presents supporting calculations on how this figure was derived.

The 13.3% figure is based on 1990 applicator herbicide use records for sites normally inhabited by noxious weeds. Applicator use records are available for commercial and government applicators only. Therefore, this figure does not include information on herbicide use by private applicators.

The NWTF granted $275,200 in 1990 toward biological control research with insects, pathogens, and grazing animals. Since the beginning of the NWTF program, these grants account for over 50% of total state revenue expended on biological control research. Additional grants awarded in 1990 include $59,000 to other weed research and $120,950 toward educational programs. (See Appendix D, DPEIS for more specific information.)

Individual projects are approved for funding from one to several years depending on the scope of the project. Approximately 112 grant projects were ongoing throughout the state in 1990. Of these 112 projects, 35 were visited and evaluated by the state weed coordinator (Mullin 1991). County weed budgets and grants received by them are audited by the Montana Department of Commerce at least every 2 years through routine county audits.

TABLE 3-2

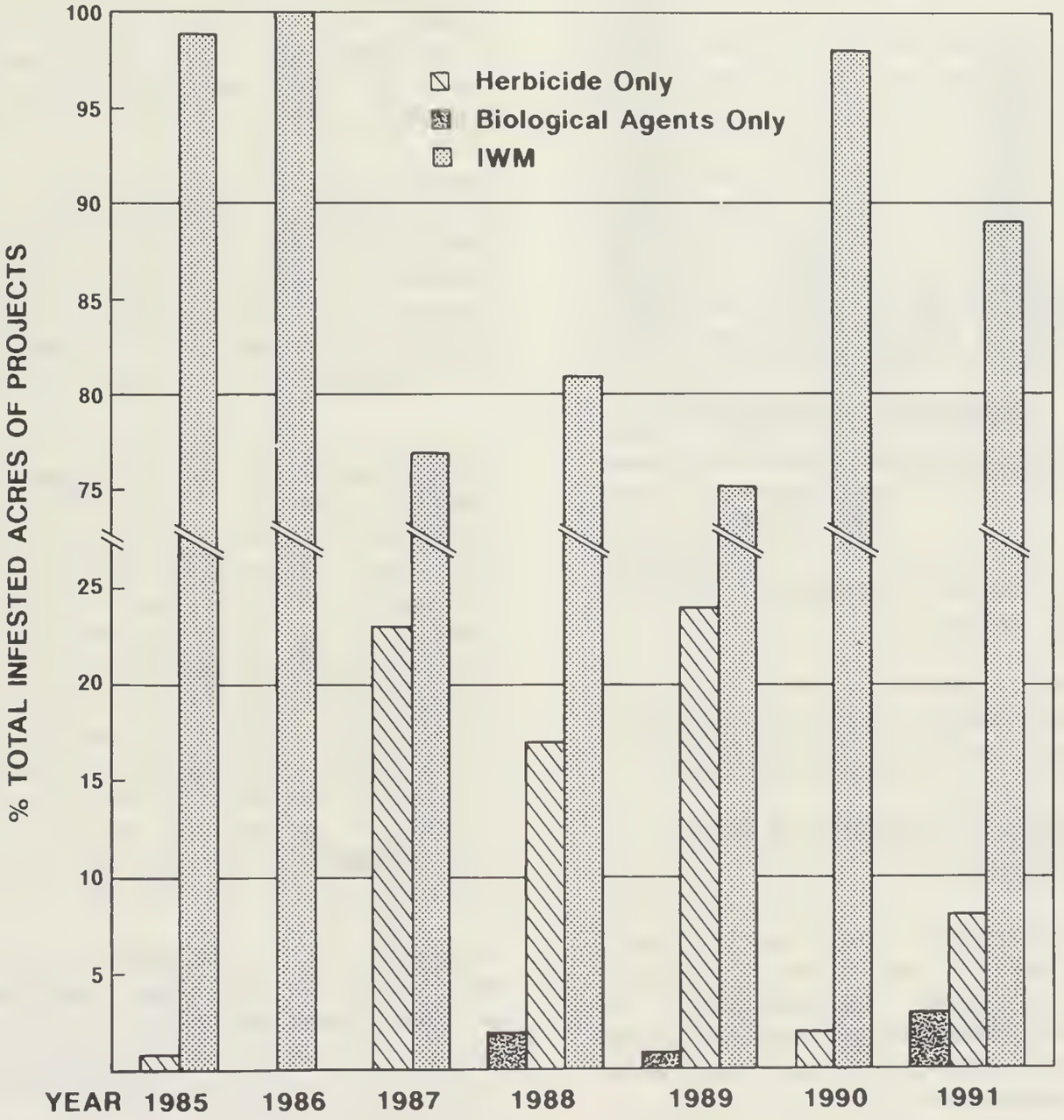
SUPPORTING CALCULATIONS
NWTF CONTRIBUTION TO CHEMICAL WEED CONTROL

No.	Percentage	Description	Cost Figure
1	1%	Herbicide surcharge for 1990	$ 367,755.00
2	100%	Total herbicide sold in 1990	$ 36,776,000.00
3	13.3%	Estimated herbicide sold for noxious weed control (Mullin 1991)	$ 4,891,208.00
4	10%	NWTF grants for on-ground control - 1990 (portion of cost-share for herbicide purchase) (Costs - #4 divided by #3)	$ 500,000.00

In order to describe the overall performance of the NWTF program, projects funded by the NWTF were evaluated to measure the effectiveness of the grant program. Individual projects were divided into four categories, including: co-operative group projects, biological research projects with insects, other research, and educational programs. A review of the four different types of projects follows.

COOPERATIVE GROUP PROJECTS

A total of 188 on-the-ground cooperative weed management projects were funded from 1985 through fiscal year 1991. The majority of projects involved management programs on spotted knapweed, followed by leafy spurge, Dalmatian toadflax, sulfur cinquefoil, Russian knapweed, whitetop, and purple loosestrife. Management techniques have been applied statewide to approximately 280,000 acres of knapweed (including spotted and diffuse) and 72,166 acres of leafy spurge since 1985. All cooperative group projects included education as part of their programs, and the majority used an integrated weed management approach (Figure 3-1).

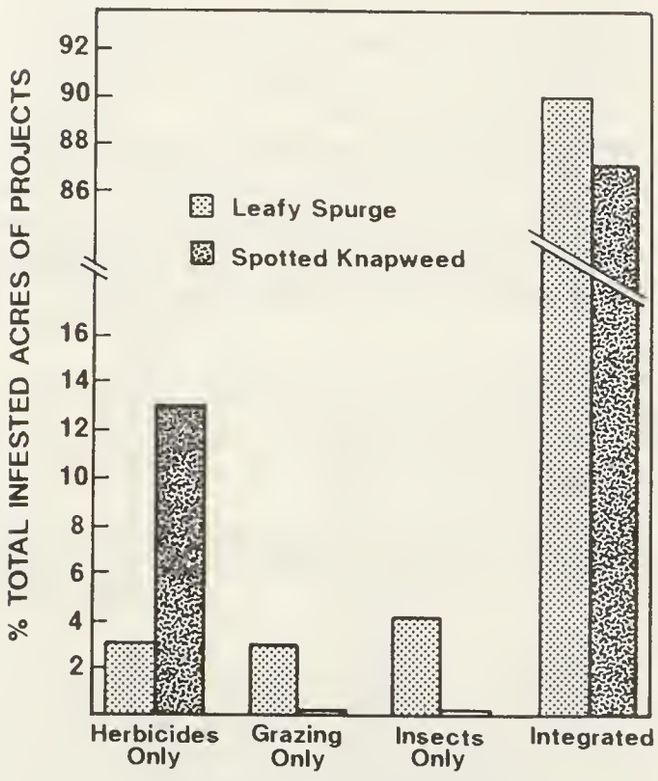


Percent of Leafy Spurge and Spotted Knapweed Infested Acreages Treated Under NWTF On-the-Ground Management Programs; 1985-1991

NWTF-Programmatic EIS
FIGURE 3-1

Source: Unpublished Data, NWTF Grant Files

Herbicide-only programs were utilized to a greater degree for management of spotted knapweed infestations than for leafy spurge (Figure 3-2).



Percent of Leafy Spurge and Spotted Knapweed Acres Treated With Various Management Methods, NWTF-Programs 1985-1991 NWTF-Programmatic EIS

Source: Unpublished Data, NWTF Grant Files

FIGURE 3-2

A review of selected cooperative group projects funded by the NWTF program follows.

Southwestern Cooperative Weed Control Area

Because of the large number of local cooperative projects, it was not possible to include a detailed review of all areas. The Southwestern Cooperative Weed Control Project (SWCP), initiated in 1985, was selected for review based on the following criteria:

- It was one of the first cooperative projects implemented.
- No NWTF revenue is currently being expended in the original project area.
- It received the largest amount of funding in 1985 ($231,256).
- It encompassed a relatively large area involving four counties.
- Several of the project areas ultimately served as a model for current cooperative projects in the state.

The project area included portions of Silver Bow, Madison, Jefferson, and Granite Counties. Spotted knapweed infested the largest acreage in the project area, with smaller infestations of Dalmatian toadflax, leafy spurge, and dyers woad.

Weed management techniques used within the four-county area included herbicide applications, release of the knapweed gall fly, development of herbicide demonstration plots, hand pulling and cultivation within residential areas and environmentally sensitive sites, and experimental releases of a fungal agent to control spotted knapweed.

Educational programs included an annual tour to show the effectiveness of the program in each county. Special programs for the four-county area included project area tours for legislators, East Pioneer Stewardship participants, and members of the Intermountain Section of the Society for Range Management. Weed awareness days were held involving schools, civic and special interest groups, and local officials. Numerous radio and television programs were aired to increase weed awareness. Over 30,000 spotted knapweed brochures were printed by the counties and distributed by sportsman groups, Montana Department of Fish, Wildlife and Parks, and weed boards.

Although the four counties worked together as a cooperative group, cost-share funds from the NWTF were distributed to individual project areas over a 3- to 5-year period. The amount of funds received in each project, number of acres infested, and an evaluation of individual county projects are described below.

SILVER BOW COUNTY

The Stewardship project area encompassed 85,000 acres of rangeland, of which 3,000 acres were infested with spotted knapweed. Total revenue received from the NWTF was $66,500 over a 3-year period. NWTF cost-share revenue has not been received in this area since 1988, however, control programs are on-going, using funds from private, state, and federal sources.

Herbicides, experimental releases of *Sclerotinia sclerotiorum*, hand pulling, and release of the knapweed gall fly were used for controlling spotted knapweed. Visual estimates taken in 1991 indicate that less than 10% (approximately 200 acres) of the original spotted knapweed infestation remains at density levels that require treatment. Since spotted knapweed seed remains viable in soil for 10 years or more, previously infested areas must be monitored annually for retreatment. Research has shown that spotted knapweed can spread at a rate varying from 12 to 27 percent. Based on a conservative estimate of 15% annual spread rate for spotted knapweed, a total of 6,938 acres would be infested if control measures had not been initiated.

Because of educational programs on noxious weed identification, a 10-acre infestation of dyers woad was found within the project area south of Butte. In 1985, 4,000 dyers woad plants were pulled from the 10-acre site. By 1991, only 54 plants remained on the site and these were removed by hand pulling. In comparison, a 100-acre dyers woad infestation located south of Dillon that was not part of an active weed management area spread from 100 to 200 acres between 1986 and 1991 (Hahnkamp 1991).

There have been no reports of damage caused to non-target vegetation by any of the control techniques utilized in the project area. The amount of herbicide necessary to manage knapweed within the project area has declined over 85% since the project was initiated.

GRANITE COUNTY

The Philipsburg project area encompassed 37,000 acres, of which 3,230 acres were infested with spotted knapweed. Infestations occurred in the town of Philipsburg, railroad and highway rights-of-way, and surrounding private and federal lands. Total revenue received from the NWTF was $53,201 over a 4-year period. NWTF cost-share revenue has not been received since 1989. The weed management program is on-going with funds from private, county, state, and federal land management agencies.

Education of the general public and federal agency personnel was an important part of the Philipsburg project. Public meetings, training sessions, newspaper articles, and tours were used to increase awareness and concern about noxious weeds. Press releases were used to inform residents about the cooperative project and the types of control techniques that were proposed. Residents with concerns about herbicide applications were urged to contact the county extension agent or county nurse. Public announcements, in addition to direct contact with concerned individuals by the sheriff's office or county extension agent, were made several days prior to herbicide applications. Residents could also request that herbicides not be applied on roadsides adjacent to their property. Hand pulling, mowing, or non-persistent herbicides were used in residential areas or on other environmentally sensitive sites.

Visual estimates by the project coordinator in 1991 indicate that only 230 acres (7% of the original infestation) of spotted knapweed remained that required treatment. Infested acres are visually monitored annually to determine if retreatment is necessary. Based on a 15% spread rate, a total of 7,471 acres would be infested with spotted knapweed without an active control program. There were no reports of herbicide injury to non-target plants, or other damage, as a result of weed control methods used in the project area.

MADISON COUNTY

The Virginia Hill project area encompassed 40,000 acres with 10,000 acres infested by spotted knapweed. The NWTF provided $81,506 in cost-share funds over a 3-year period beginning in 1985. Although NWTF revenue has not been

received by this project since 1988, it remains an active management area.

The project area encompassed a subdivision, two incorporated towns, and adjacent state, federal, and private rangeland. Educational programs, herbicide applications, and release of biological control agents were used in the integrated program. Because of the relatively large acreages infested with spotted knapweed, the goal of the project was to contain the spread of the weed and control infestations in the most critical areas.

Soil properties and depth to ground water were evaluated to determine areas sensitive to herbicide applications. Short-residual herbicides, hand pulling, and releases of the knapweed gall fly were used in residential areas and sites near open water or shallow ground water. There were no complaints received from county residents as a result of the control efforts; however, several calls were received from people who wanted more areas of knapweed treated (Peterson 1991). There was no evidence of damage to non-target vegetation, including sensitive crops, trees, or shrubs. Production of native grass species increased 200% to 800% following herbicide application.

Estimates in 1991 by the project sponsor indicate that spotted knapweed density was reduced 90% to 100% on approximately 4000 acres. Areas with high production potential and perimeter of infestations have been treated on the remaining 6000 acres. Areas must be monitored for retreatment annually as knapweed will re-establish from seed in the soil. It is believed that the infestation is contained within the original boundaries. Based on a 15% annual spread rate, about 22,800 acres would now be infested if no program had been initiated.

JEFFERSON COUNTY

The Jefferson County project originally encompassed an area of 70 square miles and was subsequently enlarged to include 311 square miles. Approximately 49,662 acres were infested with noxious weeds. The NWTF provided $30,059 in cost-share funds from 1985 through 1990 (Kountz 1991).

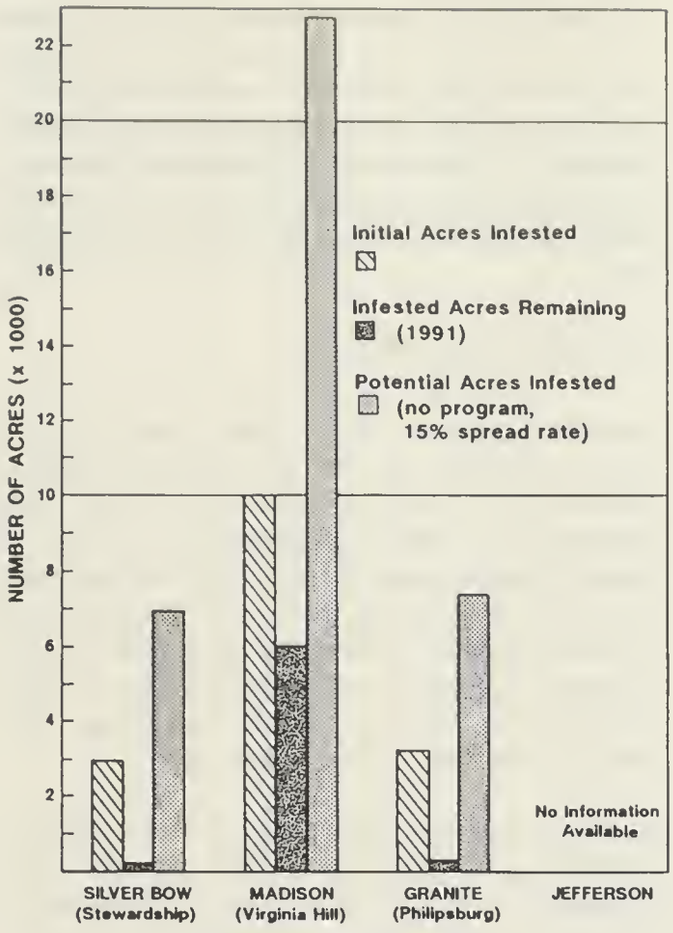
The project was organized by the weed district in 1985 and presented to landowners when the grant was approved. Initial participation by private landowners was relatively slow, but the project eventually expanded to include 126 interested landowners. Although herbicides and hand pulling were the primary methods used to manage noxious weeds, releases of the knapweed gall fly were made in 1988.

While private landowners were successful in managing about 5,580 acres of noxious weeds as a result of the cost-share program, several problems emerged. The large number of acres involved made it extremely difficult to develop cooperative control efforts between adjacent landowners and untreated sites continued to serve as a source of spread to treated areas. In addition, the acreage infested with noxious weeds was too extensive to manage in a single program. Since only 11% of the total infested area was treated over the 5-year period, the management program was not successful in containing noxious weeds in the entire project area.

The program was completed in 1990; it is not known whether cooperating landowners are continuing to manage the weed infestations, and no information is available concerning the present acreage infested with weeds.

SUMMARY

This review of cooperative programs funded by NWTF indicates that three of the four projects were successful in managing spotted knapweed. An average of 60 percent of initial spotted knapweed infestations were controlled and all infestations contained within the three project areas (Figure 3-3). Based on an estimated annual spread rate of 15 percent, 20,979 acres were protected from spotted knapweed invasion as a result of the management effort.



Case Study: Spotted Knapweed Infestation
Southwestern Cooperative Weed Control Project
NWTF-Programmatic EIS
FIGURE 3-3

Source:
Unpublished Data, NWTF Grant Files

The effectiveness of cooperative projects is directly related to the commitment of the project leaders and participants in the project areas. Other observations obtained from the review are:

- An integrated weed management approach should be utilized on most cooperative projects.
- Project areas should be relatively small in scale and have well-defined boundaries.
- Projects must be organized by participants in the project area, with weed boards and weed supervisors providing support for the group.
- A landowner within the project area should serve as the project leader.

BIOLOGICAL RESEARCH WITH INSECTS

The NWTF provides over 50% of the budget for biocontrol research, excluding federal programs, in the state (Mullin 1991). The majority of these funds have been awarded to Montana State University entomologists who receive matching funds from their departments. Funds have been allocated for screening, collection, rearing, and redistribution of insects on spotted knapweed, leafy spurge, musk thistle, and Dalmatian toadflax.

Projects that involve biological control with insects were evaluated based on the number of insects collected, screened, reared, or released as a result of funds received through the NWTF. Following is a review of those projects.

Biological Control of Spotted Knapweed

To date, the NWTF has awarded approximately $397,900 to the knapweed biological control effort at the Western Agricultural Research Center in Corvallis, Montana. A total of $272,700 has been used to fund the foreign host specificity-testing of two seed head flies, (*Chaetorellia acrolophi* and *Terellia virens*), and a seed head weevil (*Larinus obtusus*); $85,400 has been used to fund the foreign collection of three root moths (*Agapeta zoegana*, *Pterolonche inspersa*, and *Pelochrista medullana*), a root weevil (*Cyphocleonus achates*), and a seed head fly (*Chaetorellia acrolophi*). The remaining $39,800 has been used to fund mass-rearing of the root moth (*A. zoegana*) and the root weevil (*C. achates*). During the last 2 years, more than 19,000 root moth adults have been redistributed as a result of the rearing efforts. Host-specificity tests have been completed on the two seed head flies and testing of the seed head weevil should be completed in 1991 (Story 1991).

The NWTF has been instrumental in helping secure the biological agents necessary for control of spotted knapweed. All overseas testing and collections of the insects and about one fourth of the mass-rearing efforts have been funded by the NWTF. In addition to NWTF grants, research

efforts within Montana have been funded by Montana State University, with some assistance from county weed districts (Story 1991).

Biological Control of Musk Thistle

The NWTF awarded $15,000 to Montana State University to study insects for biological control of musk thistle. To date, four insects have shown promise as control agents. A weevil (*Trichosirocalus horridus*) is currently being redistributed from populations in Wyoming. One population is now established near Corvallis, Montana and establishment of the insect has been confirmed at two sites where releases were made in 1990. A stem-boring fly (*Cheilosia corydon*) has been released at one location in Montana and biological studies are ongoing. Host-specificity testing is continuing on *Cassida rubiginosa* and a flea beetle (*Psylloides chalcomera*) (Littlefield 1991).

Biological Control of Leafy Spurge and Dalmatian Toadflax

The Entomology Research Lab at Montana State University has received approximately $250,000 from the NWTF for screening of foreign insects on leafy spurge and Dalmatian toadflax. Approximately 60% of the revenue has gone toward leafy spurge and the remainder to Dalmatian toadflax. Six insects have been screened thus far on leafy spurge, including: three root boring insects, (*Pegomya curticornis*, *Chamaesphecia hungarica*, and *Chamaesphecia crassicornis*); a flea beetle, (*Aphthona lacertosa*); a gall midge, (*Spurgia esulae*); and a web worm, (*Oxicesta geographica*). These insects are scheduled to arrive in Montana in 1992 (Noweriski 1991).

Screening has also been completed on three insects for toadflax: *Eteobalea intermediella* and *Mecinus janthinus* on Dalmatian toadflax, and *Eteobalea serratella* on yellow toadflax. These insects are also scheduled to arrive in Montana in 1992 (Noweriski 1991).

The NWTF has enabled Montana State University to develop one of the most comprehensive and progressive biological weed control programs in the United States. Montana, through support of the NWTF, typically contributes more than any other state toward screening of new insect and pathogen biocontrol agents of weeds (Noweriski 1991).

OTHER RESEARCH

Research projects which have received funds from the NWTF but did not involve biological control with insects include the use of plant pathogens and grazing animals for control of noxious weeds, weed surveys, weed biology, and environmental impacts from noxious weeds and poisonous plants. Total NWTF revenue expended on these projects was $315,935 from 1985 through 1990. Projects funded in fiscal year 1991 were not included in the evaluation.

Research was evaluated based on the number of publications resulting from each project. Publications included those reported in professional journals, symposia proceedings, and non-technical journals. Results indicate that 84% of these research projects had at least one publication. A total of 36 publications resulted from 18 projects. A list of publications, by project, is shown in Appendix E (DPEIS).

EDUCATIONAL PROGRAMS

Educational programs have been recognized as the key to success of many cooperative group projects. Increased financial support from the legislature for the NWTF grants program and greater emphasis on crop and noxious weed research also indicates that public education programs have been successful.

A total of 34 educational projects on noxious weeds were funded from 1985 through 1991, totaling $372,145 in NWTF funds. Projects included the state weed fair, spotted knapweed

symposium, tours, bulletins, radio and television announcements, and other demonstration/ educational programs.

Although it is difficult to measure the relative success or failure of educational programs, several observations were made concerning the impact of these programs in the state. Public support for weed management programs appears to be growing based on the increased number of cooperative group projects submitted to the NWTF. This indicates that more people are becoming concerned about the impact and management of noxious weeds. Support from federal and state agencies for managing weed infestations has also increased since 1985.

AFFECTED ENVIRONMENT

Chapter 4

CHAPTER 4

AFFECTED ENVIRONMENT

NATIVE VEGETATION

The vegetation of Montana consists of plant communities adapted to diverse soils, topography, climate, and biological influences. These communities include coniferous forests at higher elevations of foothills and mountains, shrublands and grasslands in intermontane valleys and plains, and riparian forests and meadows along rivers and streams. Payne (1973) identified 22 native plant communities in Montana based primarily on species composition.

The forest vegetation of western Montana is dominated by Douglas-fir, ponderosa pine, and western larch at moderate elevations, with subalpine fir and lodgepole pine occupying higher and cooler sites. Intermontane grasslands in major river valleys and foothills are dominated by bunchgrasses, such as Idaho fescue, rough fescue, and bluebunch wheatgrass.

Vegetation of central and eastern Montana consists mainly of mixed-prairie grasslands and big sagebrush-grasslands. Dominant plants include blue grama, needle-and-thread, western wheatgrass, threadleaf sedge, prairie junegrass, fringed sagewort, big sagebrush, silver sagebrush, and plains prickly pear.

Riparian vegetation in western Montana typically consists of a forest overstory of black cottonwood with Engelmann spruce or ponderosa pine co-dominating on sites in late stages of ecological development. East of the Continental Divide, the dominant species of riparian plants include plains cottonwood, narrow-leaf cottonwood, green ash, box elder, snowberry, and rose.

There are no plants in Montana listed as threatened or endangered under the Federal Endangered Species Act. However, the Montana Natural Heritage Program has identified rare, endangered, threatened, and sensitive plants and plants of limited distribution in the state (Shelly and Lesica 1990). Although these plants have no legal status that would require special management or protective efforts on state or private lands, the BLM and USFS have adopted policies to preserve "sensitive" species that are candidates for classification under the federal act.

The Montana Natural Heritage Program considers seven Montana plants to be endangered, 28 to be threatened, and 250 to be sensitive (Shelly and Lesica 1990). Endangered plants are in danger of extinction throughout all or a significant portion of their range in the state. Threatened plants are likely to become endangered throughout all or a significant portion of their range. Sensitive plants have limited populations in Montana or are principally restricted to habitats considered vulnerable to human-caused disturbances. Based on known distribution and habitat characteristics, 25 species considered to be threatened, endangered, or sensitive grow on areas susceptible to invasion by noxious weeds (Table 4-1).

Although native species are the dominant members of most plant communities, their relative abundance and ecological interrelationships have been altered by establishment of transportation corridors, subdivisions, livestock grazing, farming, logging, fire control, and the introduction of exotic plants.

Fifteen exotic plants are currently designated as noxious weeds in Montana. Although nine weed species are well established in the state, spotted knapweed and leafy spurge cause the greatest concern because of their extensive acreages, highly competitive nature, and persistence. Spotted knapweed and leafy spurge currently infest approximately 4.7 and 0.5 million acres respectively (Lacey, C.A. 1987a).

Spotted knapweed is a short-lived perennial that reproduces by seed. It was first reported in

TABLE 4-1

ENDANGERED, THREATENED, AND SENSITIVE PLANTS THAT COULD GROW ON AREAS TREATED FOR NOXIOUS WEED INFESTATIONS

COMMON/SCIENTIFIC NAME	STATUS
Spring forget-me-not (*Myosotis verna*)	Endangered
Sapphire rockcress (*Arabis fecunda*)	Threatened
Trailing fleabane (*Erigeron flagellaris*)	Threatened
Howell's gumweed (*Grindelia howelli*)	Threatened
Spalding's catchfly (*Silene spaldingii*)	Threatened
Idaho barren strawberry (*Waldsteinia idahoensis*)	Threatened
Narrow-leaf milkweed (*Asclepias stenophylla*)	Sensitive
Gray's milkvetch (*Astragalus grayi*)	Sensitive
Obscure evening-primrose (*Camissonia andina*)	Sensitive
Naked-stemmed evening-primrose (*Camissonia scapoidea*)	Sensitive
Deer paintbrush (*Clarkia cervina*)	Sensitive
Common clarkia (*Clarkia rhomboidea*)	Sensitive
Anderson's larkspur (*Delphinium andersonii*)	Sensitive
Desert yellow daisy (*Erigeron linearis*)	Sensitive
Small-headed tarweed (*Madia minima*)	Sensitive
Great Basin orogenia (*Orogenia linearifolia*)	Sensitive
Branching phacelia (*Phacelia scopulina*)	Sensitive
Hot spring phacelia (*Phacelia thermalis*)	Sensitive
Oregon checker-mallow (*Sidalcea oregana*)	Sensitive
White-stemmed globemallow (*Sphaeralcea munroana*)	Sensitive
Spiny skeletonweed (*Stephanomeria spinosa*)	Sensitive
Poison suckleya (*Suckleya suckleyana*)	Sensitive
Wooly-head clover (*Trifolium eriocephalium*)	Sensitive
Hollyleaf clover (*Trifolium gymnocarpon*)	Sensitive
Twin clover (*Trifolium latifolium*)	Sensitive
Wooly clover (*Trifolium microcephalum*)	Sensitive
Longstyle thistle (*Cirsium longistylum*)	Sensitive

Source: Shelly and Lesica 1990.

Ravalli County in 1920, and has since spread to every county in Montana (Lacey *et al.* 1986). Approximately 83% of the state's spotted knapweed infestations occur in six counties in western Montana, but the plant is rapidly moving eastward. The human role in the spread of spotted knapweed is evidenced by infestations along roads, railroads, powerlines, irrigation canals, and construction sites (MBOGC 1989) (Figure 4-1). Once the plant is established on these disturbed sites, it spreads rapidly onto adjacent lands.

Leafy spurge, like spotted knapweed, is found in every county in Montana. It is a deep rooted, long-lived perennial that is extremely difficult to control. Although leafy spurge will grow under a wide range of environmental conditions (Morrow 1979), it appears to establish and spread most readily along floodplains and small drainages in Montana (Figure 4-2).

GEOLOGY AND TOPOGRAPHY

Montana's diverse topography is the result of earth-forming forces, including faulting, folding, volcanism, and glaciation. Western Montana, separated from the eastern plains by the Rocky Mountains, is typified by two distinct types of mountain ranges. In northwestern Montana, the ranges are long and narrow, extending in a north-south direction. The mountains of south-western Montana are high-elevation ranges separated by broad, smooth-floored valleys or basins. These intermontane basins, which can be as much as 60 miles long and 30 miles wide, occupy up to 50% of the area (Alwin 1983). The mountains of western Montana include shale, quartzite, limestone, and a variety of igneous rocks; valley bottoms are composed primarily of unconsolidated materials. Elevations vary from 4,000 to over 12,000 feet above mean sea level (AMSL).

The remainder of the state is characterized by rolling prairies dissected by major waterways and ephemeral streams. In northeastern Montana, from the Missouri River to the Canadian border, glaciation has created a landscape dominated by potholes and moraines. Elevations are 2,000 to 3,500 feet AMSL. Rocks in this area are primarily shale and sandstone.

Topography in central and southeastern Montana is more diverse. Sedimentary rocks have been altered by erosion to form badlands, flat-topped buttes, and rugged breaks. Several igneous rock masses have intruded these prairie highlands to form isolated mountain ranges. Elevations range from less than 2,000 to over 11,000 feet AMSL.

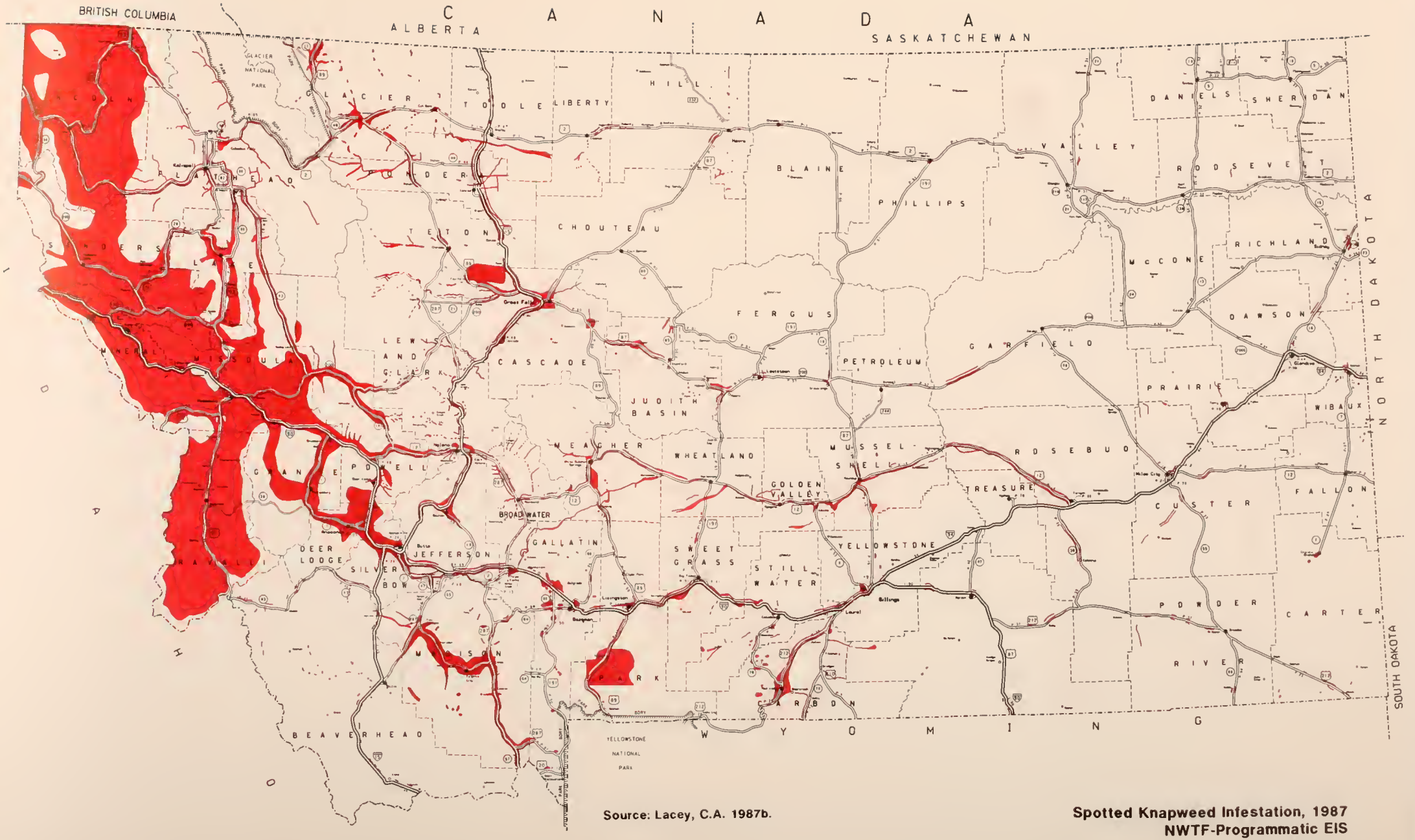
Most noxious weeds in Montana are well adapted to a wide range of environmental conditions. Although there is no direct correlation between the establishment of noxious weeds in Montana and geology or topography, certain landforms support relatively large noxious weed infestations. These areas include the intermontane basins in western Montana, foothill slopes, and floodplains. The relationship between weed density and various land forms is probably the result of increased human activity on these sites.

SOILS

The physical and chemical nature of soils in Montana is determined by parent materials, topography, climate, soil microorganisms, and geological processes. Because these soil-forming factors vary considerably over the state, there is a diversity of soil types. Soils of the semiarid eastern plains differ substantially from those of the coniferous forests in western Montana.

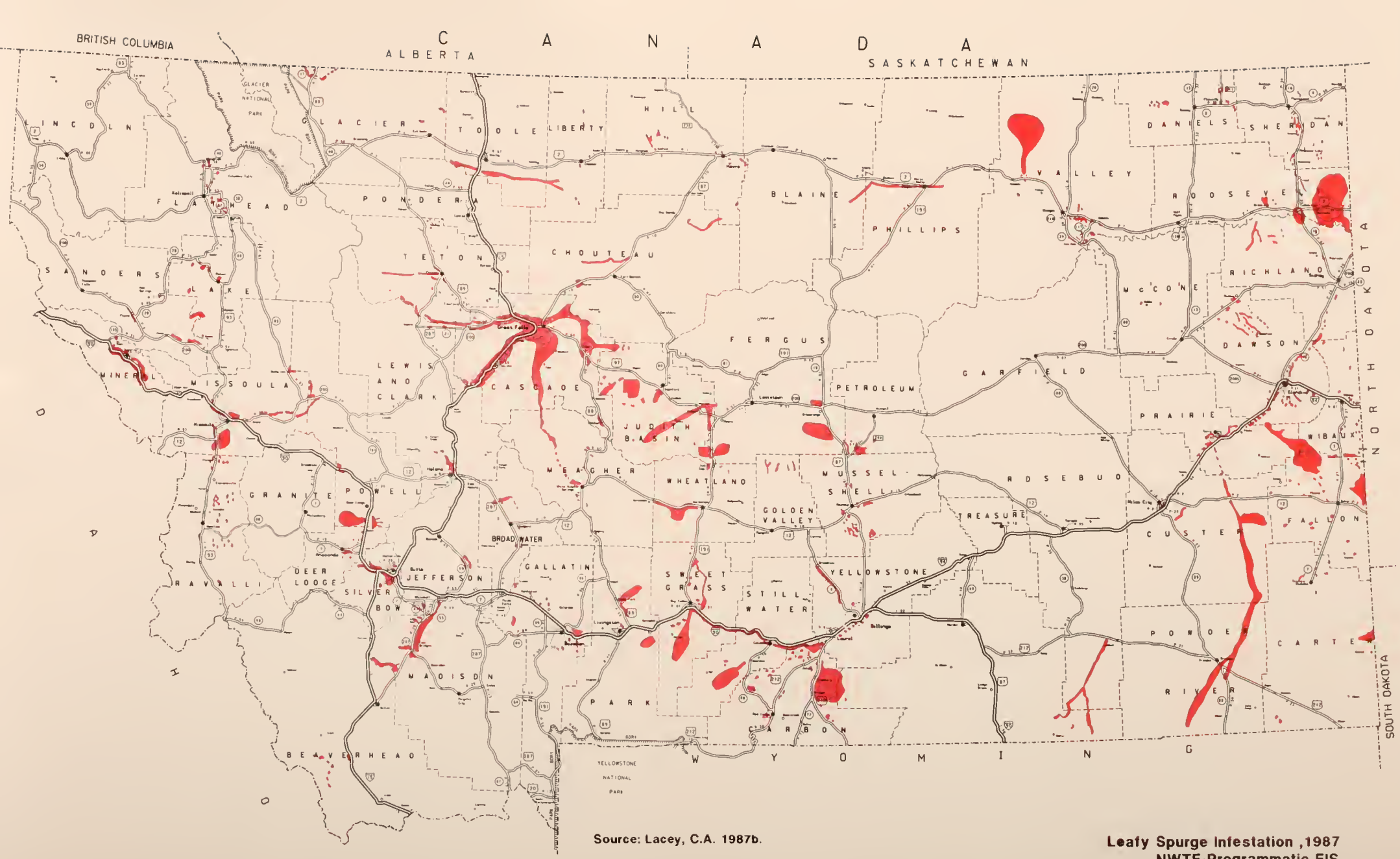
Stream and river valleys or drainage bottoms throughout Montana are composed of alluvium derived from numerous types of parent materials resulting in soils which are normally deep and fertile. East of the Rocky Mountains, soils range from being well developed and fertile to saline, sodic, or both. Soils throughout the state vary widely in texture, structural development, coarse fragment content, and chemical composition.

Soils on forested mountain slopes of western and south-central Montana are often acidic and high in organic matter content. Parent materials are hard, coarse- and fine-grained metamorphic rocks and intrusive and extrusive igneous rocks. Sedimentary parent materials include limestone, dolomite, soft red shales, and hard sandstone.



Source: Lacey, C.A. 1987b.

Spotted Knapweed Infestation, 1987
NWTF-Programmatic EIS
FIGURE 4-1



Source: Lacey, C.A. 1987b.

Leafy Spurge Infestation ,1987
NWTF-Programmatic EIS
FIGURE 4-2

Soils of the extreme northwestern corner of the state have a pronounced mantle of volcanic ash; this mantle becomes less apparent to the east and south.

Soils on steep, mountainous slopes of western Montana are poorly developed compared with the more stable soils of the plains. Soils of western Montana are "young" associated with cool environments, and are often only 10 to 20 inches thick.

Soils of southeastern Montana are derived from sedimentary shales, claystones, siltstones, and sandstones. They are moderately deep (20 to 40 inches) to deep (more than 40 inches), well developed, and associated with hot, dry prairie environments.

Soils of northeastern Montana are formed primarily from glacial till. The glacial till plain is underlain by and mixed with lesser quantities of soils developed on sedimentary rocks. Sedimentary soils are generally deeper and better developed than soils formed from glacial till.

East-central Montana is glaciated plains and rugged, dissected topography formed from water erosion. Soils are derived from parent materials of sandstone, siltstone, shale, and claystone. These soils are poorly developed due to continuous erosion, and are typical of a hot, dry environment.

Although soil type is often used as one of several environmental factors in rating the susceptibility of a site for weed invasion, there is no direct correlation between specific soil properties and establishment of noxious weeds in Montana. Watson and Renney (1974) found that spotted knapweed could tolerate a wide range of soil chemical and physical factors, and that weed establishment was a function of soil disturbance rather than specific soil properties. Similar findings were also reported for Dalmatian toadflax and leafy spurge. Alex (1964) found that Dalmatian toadflax would establish in soils with a pH of 6.5 to 8.5 and textures ranging from sand to silt loam. Leafy spurge has been observed growing on coarse- to fine-textured soils (Morrow 1979). Although optimum conditions for growth of purple loosestrife are moist soils of neutral to slightly acid pH, the plant has been observed growing on a wide range of soil textures and types. This suggests that moisture is the most important factor for growth and reproduction of purple loosestrife (Thompson *et al.* 1987).

Numerous soil biological and physical properties can influence the persistence, mobility, and effectiveness of herbicides in a weed management program. These factors include microorganisms, organic matter content, soil texture, coarse fragment content, permeability, available water holding capacity, salinity, cation exchange capacity, slope, and pH. Appendix H (DPEIS) gives a more in-depth review of herbicide/soil inter-actions.

CLIMATE

Montana's climate falls within a broad transition zone between maritime climates to the west and continental climates to the east. West of the Continental Divide, the maritime influence moderates summer and winter temperature extremes, while east of the Divide the continental climate results in short, hot summers and long cold winters. In the mountains, elevational differences strongly affect temperature and precipitation patterns. Annual precipitation ranges from approximately 10 inches to 120-plus inches across the state (USDA, SCS 1981).

In northwestern Montana, most precipitation occurs during winter as snowfall (NOAA 1973). Generally, winter precipitation is associated with moist air masses that sweep inland from the Pacific Northwest. When these air masses collide with the mountains and arctic air masses, precipitation is often heavy on the windward side. Statewide, approximately 75% of spring and summer streamflow comes from melting snowpack (Alwin 1983).

Eastern Montana's rainy season during May and June accounts for 40% of that region's annual precipitation (Cunningham 1982). Precipitation varies widely from year to year, with groups of wet years following groups of dry years in cyclic fashion. Climatologists have noted some predictability to these wet-dry cycles.

Climate has often been viewed as an important factor in determining the establishment and spread of noxious weeds. Harris and Cranston (1979) reported that diffuse knapweed requires an arid period in the summer for germination and establishment. Climatic factors such as length of frost-free season, July temperature, evapotranspiration, and soil temperature have been used to predict the establishment of various weed species (Lindsay 1953). Chicoine (1984) matched soil type, elevation, annual precipitation, evapotranspiration, frost-free season, and July temperature for 116 spotted knapweed infestations with land cover maps to determine acreage susceptible to spotted knapweed invasion in Montana. Results indicated that over 33.9 million acres of range and grazeable woodland are vulnerable to invasion by the weed (Figure 4-3). A computer program utilized similar data to map the potential distribution of dyers woad in the state. Areas susceptible to invasion were projected using soil type, potential evapotranspiration, frost-free season, and precipitation (Nielson 1986) (Figure 4-3).

WATER RESOURCES

SURFACE WATER

Three river systems drain most of the area within Montana; the Clark Fork, the Yellowstone, and the Missouri. Streams west of the Continental Divide flow westward via the Clark Fork River to the Columbia River of Washington and Oregon, eventually discharging into the Pacific Ocean near Portland. The Yellowstone and Missouri rivers drain areas in Montana east of the Continental Divide and flow northward and eastward before joining in western North Dakota. The Missouri River eventually enters the Mississippi River before emptying into the Gulf of Mexico.

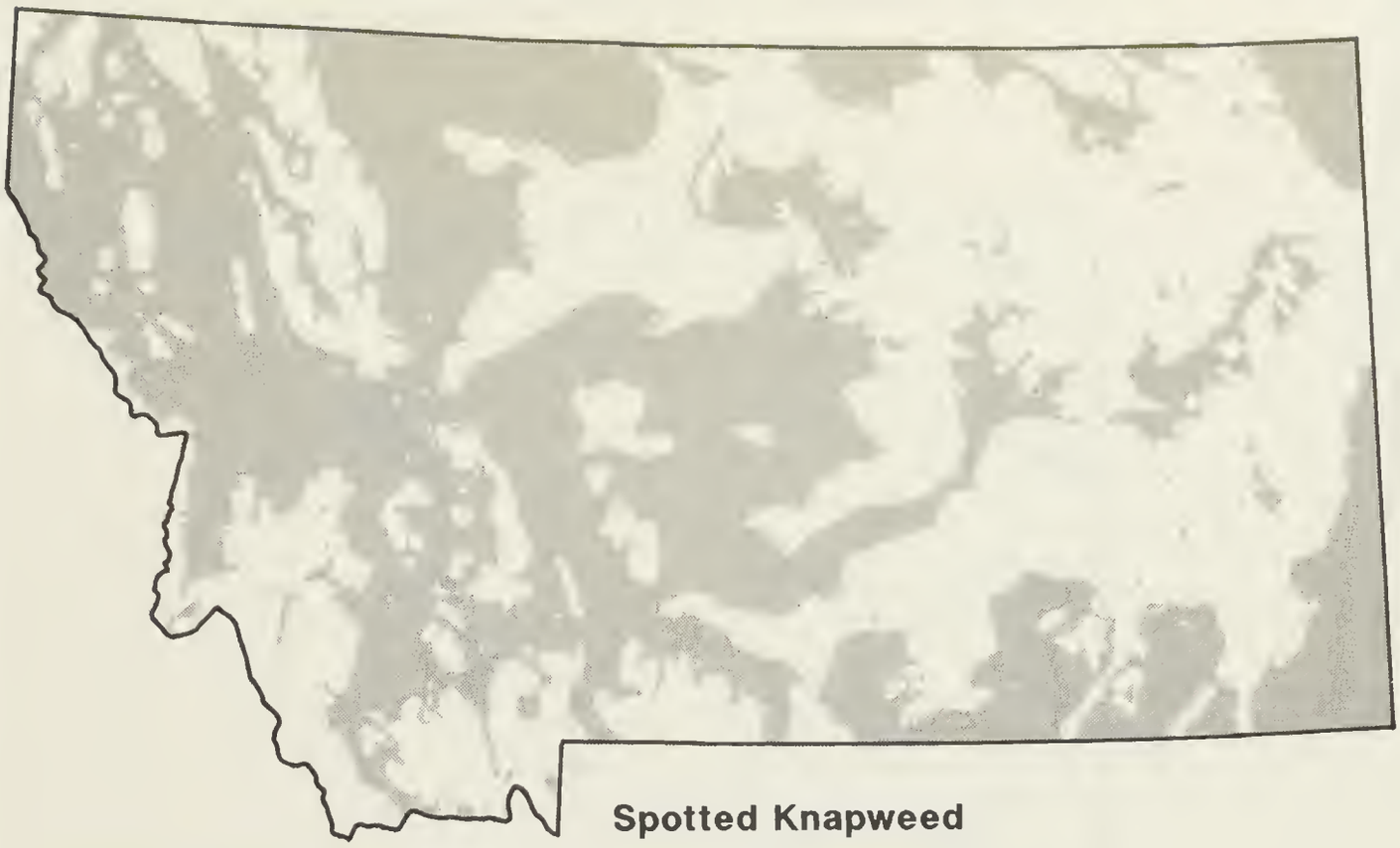
Certain drainages in portions of northwestern Montana drain northward to Hudson Bay (St. Mary River Basin) or westward into Idaho (Kootenai River Basin). Other drainages in extreme southeastern Montana flow directly eastward out of the state and enter the Little Missouri River in southwestern North Dakota.

Figure 4-4 illustrates Montana's surface watercourses. Most streams increase in volume along their courses through the input of tributary flow. Water is commonly extracted for irrigation and domestic purposes.

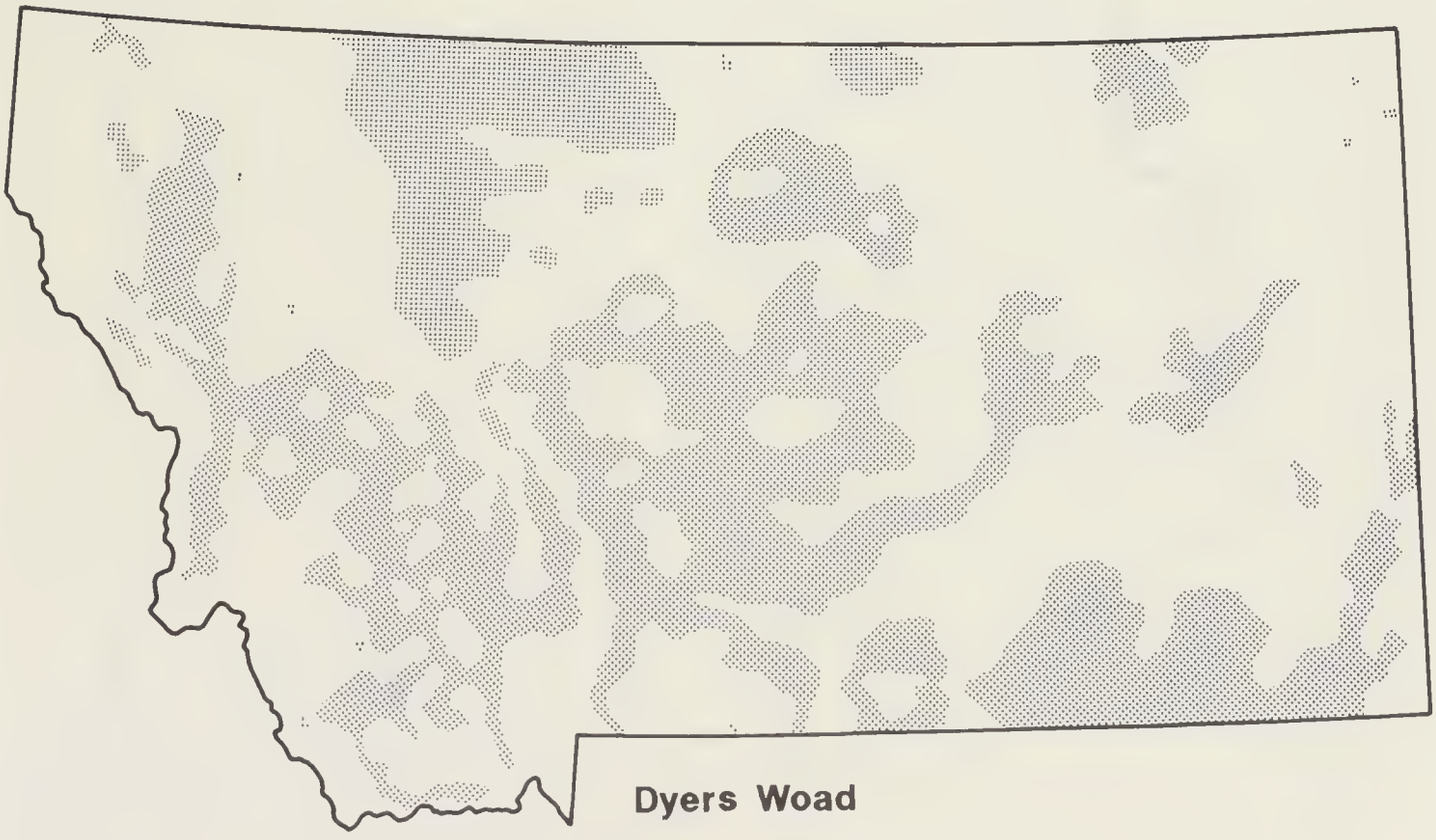
The Clark Fork River exits Montana as the state's largest river. Headwaters of the Clark Fork are in southwestern Montana near Butte and Anaconda and major tributaries include the Blackfoot, Bitterroot, and Flathead Rivers. Average discharge in the Clark Fork River near the Idaho border is 17,620 cubic feet per second (cfs). Recorded extreme flows in the river include a high of 124,900 cfs in 1964 and a low of 60 cfs in 1989 (USGS 1989). A sizable portion of the flow in the Clark Fork River as it exits the state is derived from input of the Flathead river. Several dams have been built on the Clark Fork River to generate hydroelectric power.

The Yellowstone River originates in Yellowstone National Park, Wyoming, flows northeasterly across Montana, and enters the Missouri River near Williston, North Dakota. Major tributaries include the Stillwater, Clark's Fork of the Yellowstone, Bighorn, Tongue, and Powder rivers. Average discharge in the Yellowstone River near Sidney, Montana, is 12,830 cfs. Recorded extreme flows include a high of 159,000 cfs in 1921 and a low of 470 cfs in 1961 (USGS 1989). No dams have been constructed on the Yellowstone. Water is extracted from the river along its course for irrigation and domestic purposes.

The Missouri River, formed by the convergence of the Jefferson, Madison, and Gallatin rivers in southwestern Montana, flows northward and eastward to its confluence with the Yellowstone River. Major tributaries in Montana include the Marias, Musselshell, and Milk rivers. Average discharge in the Missouri River near the North Dakota border is 10,660 cfs. Recorded extreme flows include a high of 78,200 cfs in 1943 and a low of 575 cfs in 1941 (USGS 1989). Several dams have been constructed on the Missouri River to generate hydroelectric power and to supply water for irrigation. The largest area of impounded water is Fort Peck Reservoir in northeastern Montana. Several communities extract domestic water from the river.



Source: Chicoine, 1984



Source: Nielson 1986 (MSU unpublished data)

Projected Distribution of Two Noxious Weed Species
NWTF-Programmatic EIS
FIGURE 4-3

4 - 9

Montana Surface Water Courses
NWTF-Programmatic EIS
FIGURE 4-4

The other major watercourse in Montana is the Kootenai River, which enters Montana from Canada and flows westerly into Idaho. Average discharge in the river near the Idaho border is 13,800 cfs. Extreme flows on the Kootenai River include a high of 123,000 cfs in 1948 and a low of 996 cfs in 1936 (USGS 1989). Libby Dam, constructed to generate hydroelectric power, controls flows on a large portion of the river in Montana.

Many of the major tributaries in Montana are infested with noxious weeds, including leafy spurge and spotted knapweed, and face a serious threat from purple loosestrife. Infestations of leafy spurge occur along the Yellowstone, Madison, Smith, Missouri, Powder, Milk, Marias, and Boulder rivers. The ability of leafy spurge seeds to float and germinate in water (Bakke 1936) appears to be advantageous for establishment of the plant along water channels and areas that are occasionally subjected to flooding (Selleck *et al.* 1962). Flooding and scouring effects benefit noxious weed establishment along tributaries.

The quality of surface water in Montana varies widely by location. Because mountainous areas receive large amounts of precipitation, mountain streams typically contain abundant quantities of high-quality water. Much less precipitation falls on the eastern plains of Montana, and as a consequence, less fresh water is available to recharge surface water systems.

Stream classifications have been developed by the Montana Department of Health and Environmental Sciences (MDHES) for every major river and tributary in the state. MDHES has adopted standards to limit the amounts of various pollutants that can be released into surface water. The various water quality standards for each stream class are established by administrative rules of the MDHES (ARM 16.20.601 *et seq.*).

GROUND WATER

Occurrence, quality, and movement of ground water in Montana depends on site-specific factors such as geology, topography, and climate. Water-bearing formations in the state can be divided into two broad classes--unconsolidated aquifers and consolidated aquifers.

Unconsolidated deposits in Montana are generally associated with stream action (alluvial deposits), mass-wasting processes (colluvial deposits), or deposits formed as a result of glacial activities. These deposits of sand, silt, clay, gravel, and boulders reach their most extensive development in intermontane valleys, where thicknesses may approach several hundred feet. Thicknesses of these unconsolidated aquifers outside the intermontane valley systems typically range from 10 to 100 feet. Alluvial and glacial unconsolidated deposits are frequently more extensive then deposits associated with mass-wasting processes. Coarse-grained, well-sorted deposits usually have high rates of water movement (dozens of feet per day), while fine-grained, poorly sorted deposits have low rates of water movement (one to several feet per day).

Ground water recharge in unconsolidated materials is generally a result of precipitation, snowmelt, and influent streams, while discharge is primarily from wells, effluent streams, evapotranspiration, leakage, and springs. Small distances may separate areas of recharge and discharge. Generally, recharge and discharge volumes in unconsolidated aquifers are more than those in consolidated aquifers.

In general, water quality in Montana's alluvial aquifers is good. However, in some cases, ground water quality is below the relevant drinking water standards established by the MDHES. The severity of existing impacts to ground water in Montana depends on the hydrogeologic setting, the type and volume of contaminants, and the existing and future beneficial uses of ground water. Sources of ground water contamination include underground storage tanks, injection wells, septic tanks, miscellaneous spills and uncontrolled releases, abandoned hazardous waste sites, mineral processing, agricultural activities, and natural sources of poor quality water (MDHES 1990).

Rocks ranging in age from Precambrian to Tertiary (sedimentary, igneous, and metamorphic) also form water-bearing units or consolidated

aquifers in Montana. Water movement in some of these formations takes place within the void portion of the original rock fabric. In other formations, extensive alteration of the original rock texture through the development of fractures, fissures, joints, and cavities has markedly increased the original capacity of the rock to transmit or store water.

Water occurrence and movement in these deposits is often highly variable. In many bedrock systems, the amount of ground water moving through the bedrock is low relative to unconsolidated deposits. However, the rate of ground water movement through bedrock can be relatively fast.

Because the size of pore spaces in bedrock systems are typically small, and the volume of water moving through bedrock is small relative to unconsolidated deposits, limited attenuation and dilution of contaminants occurs.

Pesticides have been identified in ground water in Montana (DeLuca *et al.* 1989) with measured concentrations that were well below the relevant drinking water standards. These pesticide residues may have stemmed from either point sources (spills, uncontrolled releases, etc.) or non-point sources (pesticide applications). A more specific discussion can be found in Chapter 6 (6-6 to 6-9).

WILDLIFE

Wildlife habitats in Montana, ranging from the western mountains to the rolling prairies of the eastern plains, support a diversity of species. The 502 species of mammals, birds, and reptiles in Montana provide the public with aesthetic, recreational, and economic opportunities (MBOGC 1989).

Big game species include mule and white-tailed deer, elk, moose, antelope, bighorn sheep, mountain goat, and black and grizzly bears. Intermontane valleys and foothills in the Rocky Mountains provide winter range for mule deer, white-tailed deer, and elk. Mule deer and elk typically migrate to lower elevations when snow becomes deep in the mountains. Winter range in mountainous areas exists in narrow bands, bounded by high snowfall areas above and urban and agricultural activities in the valley bottoms below. Winter range is the most important seasonal habitat because it is limited in area and has been eliminated or reduced by competing land uses. These winter range sites are very susceptible to invasion by noxious weeds and additional degradation of wildlife habitat.

Birds of prey (raptors) such as hawks, owls, falcons, and eagles are found in all habitats throughout the state. Waterfowl breed and migrate through all of Montana, but are especially abundant in the glaciated pothole areas in the Flathead Valley and in eastern Montana north of the Missouri River.

Montana's 80 species of fish are adapted to both cold waters of western Montana and warmer waters of the eastern part of the state. Salmonid fish (i.e., trout, salmon, grayling, and whitefish) are the dominant species in cold lakes and streams in the western part of the state. Most rivers, streams, and lakes in eastern Montana support species adapted to cool and warm water. The fish most popular with anglers are sauger, walleye, northern pike, bass, channel catfish, burbot (ling), and paddlefish.

Currently, nine wildlife species found in Montana are classified under the Federal Endangered Species Act of 1973 as either endangered or threatened. Endangered species are those determined to be in danger of extinction throughout all or a significant portion of their range, whereas threatened species are likely to become endangered in the foreseeable future. Endangered species in Montana are the peregrine falcon, whooping crane, gray wolf, black-footed ferret, bald eagle, least tern, and pallid sturgeon. The grizzly bear and piping plover are classified as threatened. Habitat destruction and loss of individual animals could lead to extinction of threatened and endangered species.

LAND USE

Agriculture is the dominant land use in Montana. About two-thirds of the state's agricultural land is rangeland and pasture that supports the livestock

industry. Cropland constitutes about one-third of the agricultural land in the state. Land ownership in Montana is comprised of 29.5% federal lands, 2.4% Indian-owned lands, 5.9% state-owned lands, and the remaining 62.2% is privately owned or rights-of-way (MDA 1990b).

Farms and ranches across Montana vary in size from a few thousand acres to many thousands of acres. In many areas, farming and livestock ranching are practiced in almost equal proportions. The "Golden Triangle" in north-central Montana is the most densely settled rural area and the most productive dryland grain farming area in the state (Alwin 1983). Agricultural development has been linked with the establishment and spread of noxious weeds since the days of the early homesteaders.

The forest lands of western Montana constitute 3.1% of the total land base in the state and are basic to the economy. With a combined area of approximately 16 million acres, western Montana's 10 national forests supply about half the region's wood products, with the remainder coming from privately-owned timberlands. Extensive road construction, off-road travel, and other surface disturbances have accelerated the spread and establishment of spotted knapweed on forest lands.

In many areas, rural populations are increasing and rural land has been progressively cleared and subdivided. There is an increasing tendency for urban workers to settle on small farms or lots within commuting distance of urban centers. Rural subdivisions and second homes now occupy land that was once undeveloped and used for agricultural purposes. This pattern of settlement is a major contributing source to the weed problem in Montana.

AIR QUALITY

Air quality in Montana is generally good. Some valleys suffer from frequent temperature inversions, particularly in winter, when topography and climatic conditions restrict air dispersion. Air pollution is controlled through ambient air quality and emission standards and permit requirements established under the federal Clean Air Act and the Montana Clean Air Act (MDHES 1980).

There are two types of air quality standards: primary standards, established at levels to protect human health, and secondary standards, set at levels to protect property, livestock, and vegetation (Montana Clean Air Act, 75-2-101, MCA). The State of Montana maintains primacy for implementation of federal air quality programs. The Clean Air Act Amendments of 1977 contain provisions to ensure that air quality does not deteriorate in areas with clean air. Class I standards, which apply to national parks and wilderness areas, allow virtually no deterioration. Most of Montana falls under Class II, which allows moderate deterioration of air quality.

CULTURAL RESOURCES

Cultural resources include physical evidence left by past societies, both historic and prehistoric. Cultural resources also include locations of events with no accompanying physical evidence. Any surface-disturbing activity on state or federal land requires that consideration be given to historical and archaeological resources.

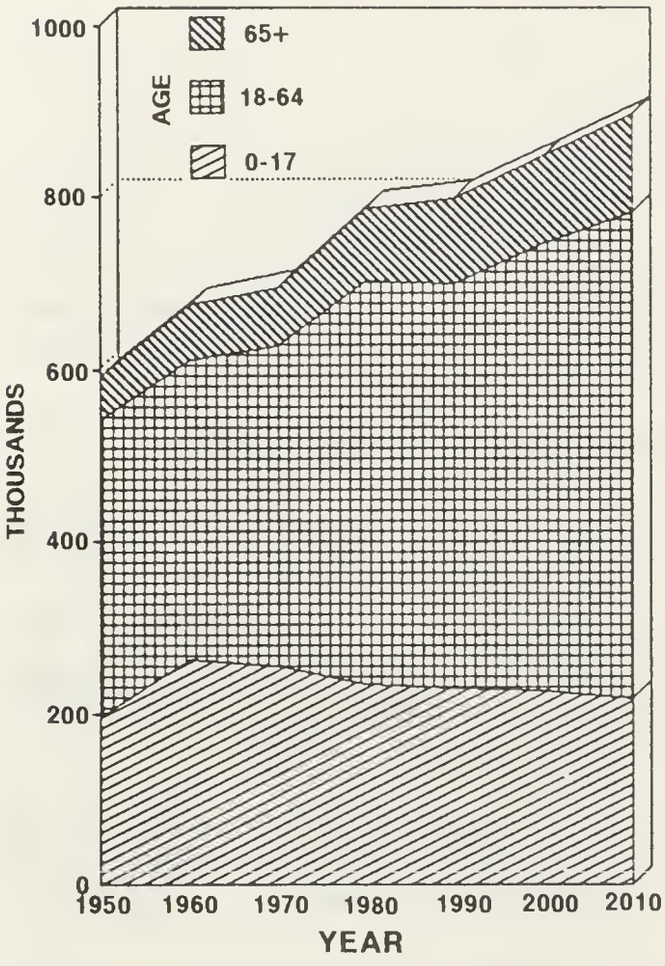
Prehistoric (archaeological) cultural resources are those associated with human habitation dating from about 12,000 years ago, the time of human migration to the western hemisphere. The historic period began in 1492, when Europeans arrived in North America and introduced Euro/American culture. Approximately 28,000 archaeological and historical sites have been recorded in Montana; however, only about 10% of the state has been surveyed for cultural resources (MBOGC 1989). A small number of cultural sites have been evaluated for inclusion on the National Register of Historic Places.

SOCIOECONOMIC CONDITIONS

ECONOMIC CONDITIONS

Between 1950 and 1990, the population of Montana grew sporadically, expanding with economic growth in the 1950s and 1970s and stabilizing with economic downturns in the 1960s

and 1980s (Figure 4-5). The overall growth rate from 1970 to 1990 was 15.1%, with over 95% of this growth occurring in the 1970s (USDC, BC 1940-90).



Montana Population
Past and Projected
NWTF-Programmatic EIS
FIGURE 4-5

Following the national recession in 1982 and subsequent declines in energy exploration and wood products manufacturing, Montana experienced a net out-migration of its population in every year from 1984 to 1990 (USDC, BC 1981-85). In 1980, there were 23,800 farms in Montana with a related farm population of 67,546. Since that time, the number of farms has remained fairly stable; however, the farm population has declined (MDA 1990b).

Baseline population and economic projections for Montana (Figure 4-5) were developed by National Planning Association, Data Services Inc. (NPA) of Washington, D.C. From 1990 to 2010, the population of Montana is expected to grow at about the same rate as it did from 1950 through 1990. By 2010, NPA projects the population of Montana to total 913,730, approximately 14% more than the 1990 census. The makeup of the population should be significantly different, however, with a smaller percentage of young people and higher proportion of people of retirement age (Figure 4-5).

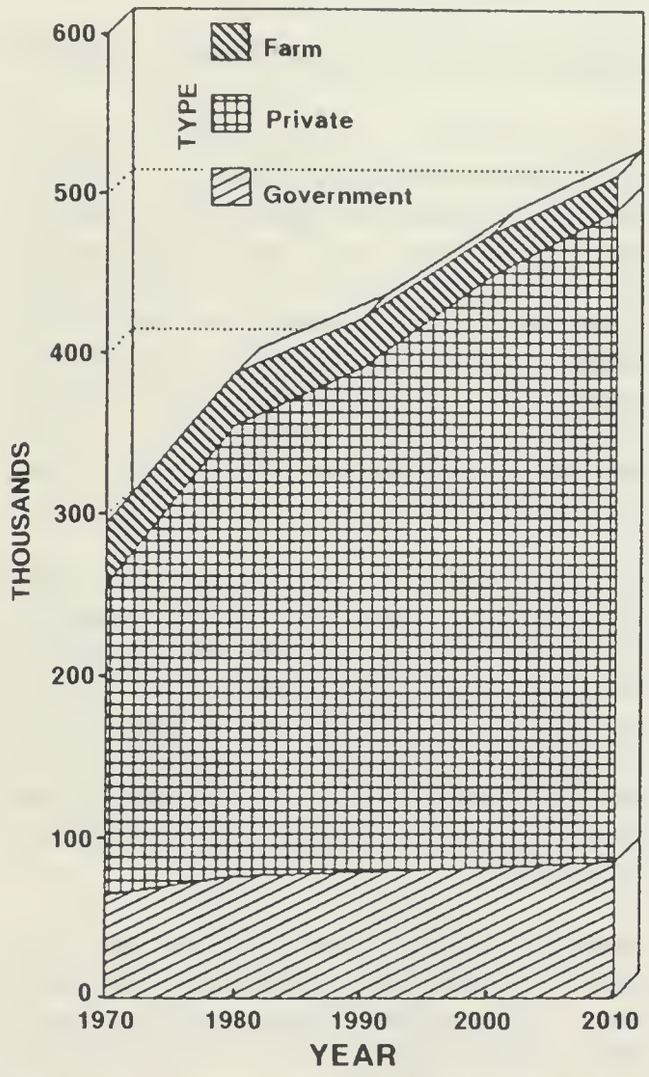
Employment in Montana has increased 43% since 1970, with most new jobs occurring in the private sector (USDC, BEA 1990). Specifically, of the estimated 95,000 new jobs created in Montana since 1970, 30,000 were in the services sector and 19,000 were in the retail trade sector. The number of farm-related jobs in Montana has decreased nearly 18% since 1970. This decline also has caused secondary impacts in the agriculture services sector and other service and retail trade sectors throughout the state.

Employment in Montana is projected to increase by 95,000 jobs by the year 2000 (Figure 4-6) (NPA 1990). Private-sector jobs are expected to increase at about the same rate as during 1970-90, while government jobs should mirror the 1980-90 growth rate. Farm jobs are expected to continue a downward trend and should total approximately 22,300 jobs by 2010.

Since 1970, per capita personal income in Montana has declined when compared with the United States average (Figure 4-7) (USDC, BEA 1990). In 1989, per capita income in Montana was $11,694, approximately 82% of the United States average of $14,175. This difference is projected to decrease somewhat by 2010, when state per capita income should equal $18,776, or 91% of the projected United States average of $20,600.

Agriculture is the primary industry in Montana, accounting for about 40% of the total farm receipts generated in the state (MDA 1990b). In 1989, farm income constituted approximately 5% of total personal income in Montana. In 1990, agricultural marketings, including government payments, totalled $1.9 billion, with 45% ($864

million) from livestock and products and 39% ($742 million) from crops. Principal livestock receipts came from the sale of cattle and calves (84% of livestock products), while primary crop receipts were realized from wheat and barley (76% of crop products).

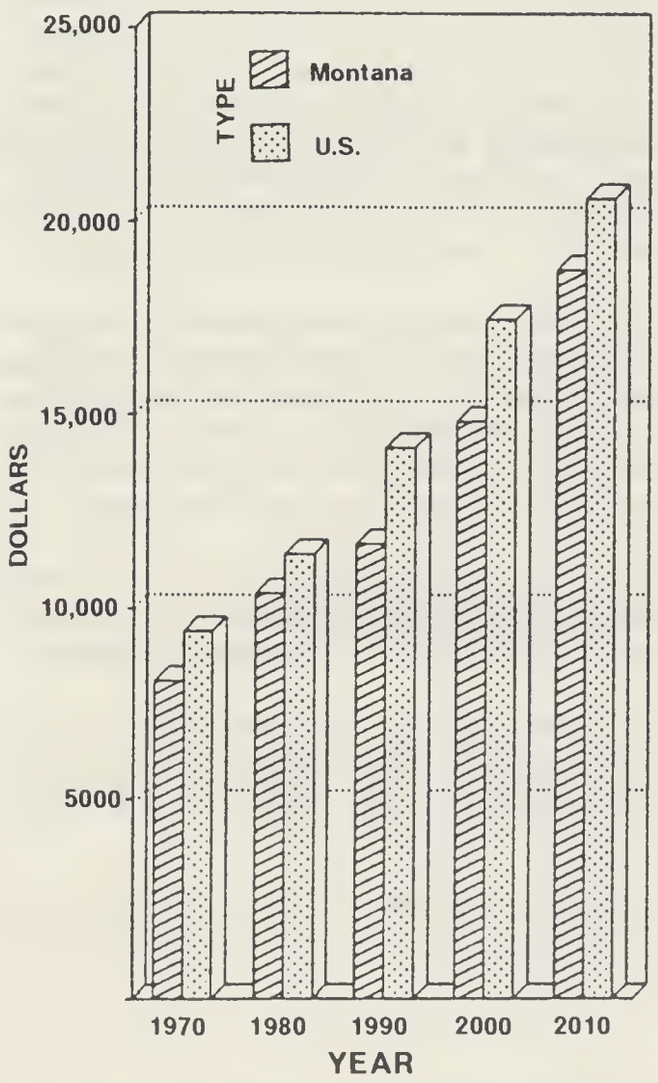


Montana Employment
Past and Projected
NWTF-Programmatic EIS
FIGURE 4-6

Currently, noxious weeds infest an estimated 8.5 million ares in Montana (Lacey 1986). Economic impacts from noxious weeds are caused by reduction in crop yields, reduced carrying capacity of range and pasture lands, decreased land values, loss of wildlife habitat, and reduced recreational opportunities. For example, Bangsund and Lesitritz (1991) calculated the economic impact of leafy spurge in Monana.

Direct economic impacts to the states' economy was $5.7 million annually based on (1) reduced income to ranchers and landowners from lost grazing capacity, and (2) decreases in production outlays associated with ranchers' herd reductions. Secondary impacts from leafy spurge infestations on grazing lands were estimated at $12.9 million. Potential declines in land values of $69.3 million in Montana were estimated using a value-to-rent ratio for private grazing lands. French and Lacey (1983) calculated that spotted knapweed invasion costs Montana's range livestock industry approximately $4.5 million annually in forage loss.

Private and government efforts to curb weed infestations and spread have resulted in economic benefits through increased agricultural production,



Montana and U.S.
Per Capita Income
NWTF-Programmatic EIS
FIGURE 4-7

higher land values, and improved recreational opportunities (primarily hunting). Further direct economic benefits are realized through local purchases of chemicals and the cost of application. The NWTF grants program provides over $1.2 million per year in grants with approximately 60% going directly into local efforts to control weed infestations.

SOCIAL LIFE

The social character and perceptions of Montanans are influenced by region of the state, occupation, ethnic background, education, population density, and numerous other factors which affect how people interact among themselves and their environment. Montana residents highly value the natural environment and the amenities that it provides, such as outdoor recreation, scenery, photography, wildlife viewing, hunting, fishing, wood gathering, and berry picking. Employment opportunities are limited and earnings are low when compared to other parts of the country, perhaps reflecting a quality-of-life premium that residents are willing to pay to live in Montana.

Life-styles of residents are influenced by their use and perceptions of the land, plant communities, wildlife, and waters. In general, two major groups can be identified relative to familiarity and concern over noxious weeds, noxious weed control, and the NWTF program--urban and rural residents.

Many rural residents, farmers, ranchers, and small landowners, come into contact with noxious weeds and their control routinely in their business.

As a result, they often view noxious weeds as a direct economic problem requiring some type of control action. Rural residents are generally aware of the NWTF program.

Urban and suburban residents usually do not work as closely with the land and may not know the state's noxious weeds, the impacts of noxious weed infestations, the various noxious weed control methods, and the effectiveness of these methods. In addition, most urban residents probably are not aware of the NWTF or its role in noxious weed control in the state.

RECREATION AND VISUAL QUALITY

Montana offers a wide variety of outdoor recreational opportunities. These can be grouped into four major activity categories: travel- and nature-based, water-based, winter, and organized games and sports. Specific activities include hunting, sightseeing, camping, picnicking, hiking, biking, horseback riding, off-road vehicle use, swimming, river floating, boating, fishing, snowmobiling, skiing, and skating, among others. Recreational activities occur at both developed and dispersed sites.

Montana's visual resource is based on the scenic quality of landscapes and the public's perception of those landscapes. The elements that constitute the visual resource include form, line, color, and texture. For any landscape or vista, a combination of these elements defines the distinctiveness of the resource. Topography, climate, vegetation, wildlife, and geology all contribute to a montage of visual elements.

Several species of noxious weeds were introduced as ornamentals because of their showy flowers. In particular, Dalmatian toadflax, with its bright yellow snapdragon-shaped flower, may add to the appeal of a landscape when viewed during the flowering season. The purple flowers of spotted knapweed may also be pleasing to some viewers. The relative importance of these plants with respect to other flowering vegetation cannot be quantified, however, when an entire vista or landscape is taken into consideration.

PROGRAM ALTERNATIVES

Chapter 5

Noxious Weed Trust Fund

Programmatic Environmental Impact Statement

CHAPTER 5

PROGRAM ALTERNATIVES

ALTERNATIVE 1 NO ACTION – CONTINUATION OF THE EXISTING NOXIOUS WEED TRUST FUND PROGRAM

This alternative provides for continuation of the NWTF program in the same manner as it is presently administered by the MDA. A full description of the program elements are contained in Chapter 3.

ALTERNATIVE 2 GENERAL ADMINISTRATIVE MODIFICATIONS TO THE EXISTING PROGRAM

Modifications to the existing program under this alternative would include the following:

GRANT APPLICATION REQUIREMENTS - NWTF

- The project development guidelines and application form would be revised to require additional information for specific resources to comply with the Montana Environmental Policy Act (MEPA) and the NWTF rules. The environmental information required of the applicants would depend on the type of weed control methods to be utilized. The following general categories would be developed for baseline information for grant applications:

1. Education and/or Research Programs

   Grant applications which seek funding for educational or research programs would not be required to submit existing environmental information in support of the projects. Projects which propose education and research activities do not constitute actions which pose threats or have the potential to impact the human environment as defined under MEPA. Projects which propose research activities must comply with FIFRA regulations concerning proper experimental procedure.

2. Non-Chemical Weed Control Programs

   Non-chemical weed control program proposals would require that the applicant provide a topographic map of the project area showing water courses, vegetation types, cultural/historic features (if tilling or burning is proposed), and soil types. This information, coupled with the description of the proposed project, would in most cases, be sufficient for the MDA to determine compliance with MEPA and NWTF rules.

3. Chemical Weed Control Programs

   Grant applications which propose using chemical weed control methods would provide environmental information in sufficient detail to allow MDA to evaluate the project under the rules of the NWTF and MEPA. Environmental baseline information to be provided by the applicant or the MDA may include the following:

   a. Topography -- topographic maps of the project area (1:24,000 suggested).

   b. Soils -- type, quality, quantity.

   c. Water Resources -- surface watercourses (map depiction); ground water information including depth to ground water; location of springs, domestic water supplies, existing wells and, wetlands (map depiction); and water use.

d. Terrestrial, Avian, and Aquatic -- general description of big game use of the project area, including critical habitat (i.e., calving areas, winter range); presence of avian species of concern such as bald eagles, peregrine falcons, or other listed species from the Natural Heritage Program; and streams with high fisheries value.

e. Vegetation -- general description of vegetation in the project area (i.e., range lands, grasslands, forest lands); dominant species in the project area.

f. Historical and Cultural Resources -- known location, National Register of Historic Places.

g. Land Use -- delineation of agricultural lands, industrial lands, and commercial lands.

4. Integrated Management Programs

Grant applications which propose the use of an integrated management program would be required to provide the environmental information commensurate with the individual elements of the integrated program. For example, the portion of the program which utilizes non-chemical weed control methods would follow the environmental information requirements of part 2 above. The chemical weed control methods portion of the program would follow the environmental information needs of part 3 above.

- The applicant would be expected to collect the required information with assistance from the appropriate government agencies including:

a. Application Completion Assistance -- county weed district, local conservation district, MDA.

b. Soils -- SCS, MDA, conservation district, university systems.

c. Surface water -- MDA, MDHES, DNRC, university systems.

d. Ground Water -- MDA, MBMG, MDHES, USGS, DNRC, SCS, university systems.

e. Wildlife, MDFWP, Montana Heritage Program, MDA, USFWS, university systems.

f. Vegetation -- MDA, county weed district, university systems.

g. Threatened, Endangered and Sensitive Species -- Montana Heritage Program, MDA, USFS, BLM.

MONTANA ENVIRONMENTAL POLICY ACT REVIEW - MDA

- An environmental assessment (EA) checklist would be submitted with each grant application. This checklist will be developed by MDA staff and reviewed by the NWTF advisory council at a public meeting. This document would replace Form NW1003 currently in use by the MDA.

  If environmental information submitted for the EA checklist is inadequate or if mitigation measures need to be developed, the MDA will request additional information. MDA will either adopt the applicant's environmental evaluation document or prepare an Environment Assessment (EA) in close cooperation with the applicant. If an EA is not adequate, an EIS will be required. The EIS will be prepared by MDA, by the applicant, or by a contractor using Trust funds.

- Grant submittals which provide for education or research projects would be categorically excluded from the requirements of MEPA.

- MDA would expect a level of training of all pesticide applicators within project areas commensurate with current EPA training and certification standards.

- MDA would request copies of county audits conducted by the Department of commerce (DOC) on a routine basis. The audits provided by DOC will form the basis for MDA's review of expenditures of NWTF funds.

- Field evaluations and site visits for each project would be conducted by MDA staff or through agreements or contracts with county agents, weed supervisors, project sponsors, or others. Evaluations for projects would include:

  1. Pre-project evaluation may include establishment of permanent photopoints and/or vegetation transects or other methods deemed appropriate.

  2. On-going project evaluations include at least one field evaluation by MDA staff and maintenance of photopoints and/or vegetation transects (or other methods).

  3. Post-project evaluations include a final report with an assessment of success or problems based on photopoints, vegetation transects, or other methods, and final MDA evaluation of the report.

  Site visits would provide information on the success or problems with weed control methods and document environmental effects (if any) resulting from the project. A copy of the evaluation would be given to the project sponsor and a copy would be filed in MDA's project file.

- The Montana Noxious Weed Trust Fund activities summary report would be compiled by MDA annually and expanded to include a brief synopsis reviewing the effectiveness of completed projects. Special attention would be given to reporting on weed control research and management practices in environmentally sensitive areas.

ALTERNATIVE 3 DISCONTINUATION OF THE NWTF PROGRAM

Implementation of alternative 3 would require legislative action to authorize cessation of the NWTF program. The trust fund monies which have accrued in the program would be distributed to the counties in accordance with rules to be promulgated by the MDA.

ALTERNATIVES CONSIDERED BUT DISMISSED

ALTERNATIVE--EXPANSION OF THE EXISTING NWTF PROGRAM

This alternative would expand the existing NWTF program to a level commensurate with the increase in the noxious weed infestation in Montana. In order to develop the expanded program, updated maps of the noxious weed infestation would be needed. The data would be used to match the scale of the expanded grants program to the predicted and observed infestation rates. Once the spread of noxious weeds is contained, the grants program would be scaled back to match the control effort required to achieve eradication.

This alternative was dismissed because funding is not sufficient to support an expanded program. This alternative would also require legislative authorization. In addition, the issue of expanding noxious weed control statewide would be more appropriately addressed by a programmatic review of the County Noxious Weed Control Act. Such review would include an analysis of the relationship between noxious weed infestations and the effectiveness of control methods.

ALTERNATIVE--GRANTS PROGRAM FUNDS UTILIZED TO SUBSIDIZE COUNTY WEED PROGRAMS

This alternative would discontinue the existing grants program and divert the funds to individual counties to provide a base funding for weed districts.

This alternative was dismissed in recognition of the original intent of the NWTF program, which was to provide cost-share money to support statewide cooperative weed management projects, weed research, and educational programs.

DIRECT, INDIRECT, AND CUMULATIVE IMPACTS

Chapter 6

Noxious Weed Trust Fund

Programmatic Environmental Impact Statement

CHAPTER 6

DIRECT, INDIRECT, AND CUMULATIVE IMPACTS

The purpose of this section of the PEIS is to review direct, indirect, and cumulative impacts of the NWTF grants program. Since this is a Programmatic EIS, direct impacts are those associated with administration of the program and indirect impacts are those associated with various noxious weed control methods.

Three alternatives are discussed in this section of the PEIS:

Alternative 1 -- No Action -- Continuation of the existing NWTF program.

Alternative 2 -- General administrative modifications to the existing NWTF program.

Alternative 3 -- Discontinuation of the NWTF program.

DIRECT AND INDIRECT IMPACTS

ALTERNATIVE 1 -- NO ACTION -- CONTINUATION OF THE EXISTING NWTF PROGRAM

DIRECT IMPACTS

The MDA's authority for administration of the NWTF is established by the Montana Noxious Weed Trust Fund Act. This authority is generally limited to requiring sufficient information from applicants to comply with the NWTF act and requiring project sponsors (applicants) to report project progress and effectiveness.

Direct impacts which can be attributed to the existing administration of the NWTF program are limited to economic impacts and potential future liability for the State of Montana. Both of these impacts are associated with the potential for environmental degradation resulting from noxious weed control methods.

Potential future liabilities for the State of Montana associated with projects funded by the NWTF program are not quantifiable. Present administration of the program provides for indemnification of the state from the grantee, which allows the MDA to secure funds from the grantee (county) in the event the State of Montana is judged liable in settlement of a lawsuit. Should the MDA or the state be held responsible for environmental damages incurred as a result of projects funded by the NWTF, a substantial economic impact could result; the cost to the state would depend on the grantee's (county's) ability to pay.

Diffuse knapweed

INDIRECT IMPACTS

Indirect impacts are those associated with the management of noxious weeds. Projects supported by the NWTF have resulted in reducing environmental and economic effects caused by weeds in the state (Chapter 2). Examples include protecting native vegetation (including rare and threatened plants) from the spread of weeds, educating the public about weeds and weed management, accelerating the biological control effort, increasing forage production for livestock and wildlife, and reducing soil erosion and surface runoff caused by dense infestations of tap-rooted weeds.

There have been no documented adverse indirect environmental impacts associated with various weed control methods used under the existing NWTF program. However, continuation of the program as it is presently being administered increases the potential for impacts to occur. Potential environmental consequences of each treatment method are evaluated below.

Vegetation

Herbicide Treatments

Herbicides, such as 2,4-D, clopyralid, dicamba, and picloram, are selective for certain broadleaf shrubs and forbs, but have little or no effect on grasses and grass-like plants. Consequently, areas treated with these herbicides would have a decrease in broadleaf plants and increased production of grasses. Rate and timing of application will determine the selectivity of a herbicide on non-target tree, forb, and shrub species. Picloram and clopyralid, applied at rates recommended to control spotted knapweed, have been shown to selectively remove the weed without damaging many other forb species (Lacey, C.A. *et al*. 1989).

Other Treatment Methods

Mechanical weed treatment or prescribed burning to control weeds could potentially impact non-target vegetation. Most mechanical methods, other than manual weed pulling, would affect both target and non-target plants. Manual weed pulling would have little or no impact on non-target species.

In general, burning promotes regeneration of most grasses and forbs, but would selectively eliminate certain shrubs and trees (USDI, BLM 1985). Most plants regenerate rapidly after fire. Although burning has little effect on noxious weeds, it may be used as a set-up treatment to reduce standing litter, allowing improved herbicide penetration.

Biological methods of weed control could include grazing animals, insects, and microbial pathogens. Grazing animals, such as sheep or goats, eat both weeds and desirable species. Both have been shown to selectively graze leafy spurge, reducing seed production. Goats are likely to browse more heavily on shrubs that may provide important wildlife food and habitat. The level of management will determine the impact of grazing animals on non-target species.

Impacts of insects and microbial pathogens on non-target vegetation generally would be slight (USDI, BLM 1989). There is only one report of an insect introduced into Montana for weed control that has infested a rare plant. The seed weevil (*Rhinocyllus conicus*), introduced for control of musk thistle, has been reported to infest a rare native thistle. The impact of the weevil on this rare plant is currently being monitored (Achuff and Schassberger 1991). Screening trials now include closely related native plants and other ecologically important species. This greatly decreases the potential for impacts on native vegetation (Story 1991).

Prescribed burning, biological control with livestock, application of chemical herbicides, and mechanical weed control methods all have the potential to adversely affect plants considered to be endangered, threatened, or sensitive by the Montana Natural Heritage Program. Treatment with any of the above methods could adversely affect these special-status plants. However, competition from noxious weeds for light, nutrients and moisture also threaten these plants.

Soils

Herbicide Treatments

The EPA pesticide registration process includes residue studies which evaluate impacts to soil. Potential impacts include loading (accumulation of herbicide residues), alteration of soil flora and fauna, and increased salt content. Although herbicide loading may have significant consequences on mixing-loading and/or spill sites, little is known about its effects in Montana soils. However, loading is most likely to occur with persistent herbicides (Sparks 1989). The potential for loading to occur is greater when treating leafy spurge where high herbicide rates may be applied to the same site for several concurrent years. Loading should not be a factor on spotted knapweed management programs where herbicide application rates are relatively low.

Effects of herbicides on soil organisms are expected to be of short duration and not significant (Audus 1976). Increased salt content is expected to occur only in cases of extreme mismanagement concerning application amounts and scheduling. Table 6-1 shows properties of five commonly used herbicides and their interaction with soils, water, and air.

Chemical, physical, and microbial processes in the soil influence the breakdown and movement of herbicides. In addition, environmental factors, herbicide properties, and application rates will also affect the persistence and mobility of herbicides in the soil. In general, herbicide breakdown is more rapid in warm, moist soils than in cold, dry soils. Soil conditions, such as high organic matter content, will increase herbicide adsorption and favor microbial populations. Appendix H contains a more technical explanation of soil processes that follow the application of herbicides.

A study conducted in Montana measured the persistence and movement of picloram in soil and its potential for contamination of surface and ground water resources. Results of the study showed that Tordon 22K (picloram) applied at 1 pint per acre moved to a maximum depth of 20 inches in 90 days. Thirteen percent of the herbicide remained in the soil 365 days following treatment. An application of Tordon 22K at 2 quarts per acre moved 40 inches through the soil. Concentrations of picloram were not found in either surface or ground water resources at either site (Watson *et al.* 1989). Persistence and movement of picloram in the soil will vary with specific soil characteristics, application rates, and climatic conditions.

Whitetop

Other Treatment Methods

Cultural weed control methods include seeding, fertilization, irrigation, promoting brush and tree canopy cover, and prescribed burning (MDA 1986). Of these practices, prescribed burning and seeding are likely to have more than short-term impacts on soil. Prescribed burning, because it consumes living and dead vegetation as well as soil organic matter, alters the chemical, physical, and microbiological properties of soil. Low-intensity fires increase soluble nitrogen, phosphorus, potassium, sulfur, magnesium, sodium, and calcium; as a result, the cation exchange capacity and pH are increased. Microorganism populations and activity rates decline after a burn,

TABLE 6-1

FIVE HERBICIDES IN PROMINENT USE IN MONTANA AND PROPERTIES RELATING TO THEIR INTERACTION WITH SOILS, WATER AND AIR

Name [6]	Chemical	Clopyralid	Dicamba	2,4-D	Picloram	Glyphosate
	Commercial	Stinger, Curtail	Banvel	(Various Names)	Tordon	Roundup, Rodeo
Organic Compound Classification [1,5]		Picolinic Acid	Benzoic Acid	Phenoxy(Phenoxyalkanoic)	Picolinic Acid	Miscellaneous and Aliphatic
Molecular Weight [9]		192	221.04	221.0	241.5	169.1
Persistence* [2, 3, 8, 9]		1-3 months	<3-12 months	1-4 weeks	1 month-> 4 years	Short**
Mobility [8, 9]		High	High Affected by capillary movement and surface evaporation	Realtively High	High	Relatively Low
Adsorption to Soil Colloids [8, 9]		Low	Low	Moderate	Low	High Strong as evidenced by low phytotoxicity produced by soil applications
Leaching Potential [4, 7, 8]		High	High Readily leached; runoff possible w/heavy rainfall after spraying	Low to Medium Formulation dependent; salts more leachable than esters; runoff potential greater for esters	High Seldom leaches below 20-30 cm for most soil types except sandy soils; runoff likely if heavy rainfall within 1 to 2 mos after application	Low Minimal
Water Solubility (25°) [9]		.1g/100 ml	0.65 g/100 ml	0.09 g/100 ml	0.043 g/100 ml	1.57 g/100 ml
Surface Runoff Loss Potential [7]		Low	Low	Low to Medium	Low	High
Microbial Degradation [4, 9]		Major Mechanism	Major Mechanism	Rapidly Degraded	Slowly Degraded	Slowly Degraded
Volatile [4, 9]		No	Yes	Yes (formulated products)	No	Low
Photo Degradation [4, 9]		None	Degrades Slowly	Minor	Yes	Minor
Other Comments [2, 9]				Sesone (phenoxy herbicide) reacts with water in soil to form 2,4-D		

* Factors affecting persistence are volatility, photodecomposition, adsorption, leaching, runoff, plant intake, microbial decomposition and chemical decomposition.
** No herbicidal activity in soil, although residues can be detected.

1. Ashton and Crafts 1981
2. CAST 1985
3. DOE 1983
4. EPA 1981
5. Grover 1988
6. MDA 1986
7. Meister 1991
8. USDI 1985
9. Colby et al.

but can eventually recover to levels higher than those existing prior to treatment. Postfire soil temperatures increase for a short time after a burn because of reduced vegetative cover and increased soil droughtiness (USDI, BLM 1989). Planting and seeding practices include the establishment of desirable plant species to compete with noxious weeds. These methods are intended to prevent noxious weeds from becoming established or slow their invasion.

Mechanical and manual methods for controlling weeds include mowing, plowing, discing, grubbing, and hand pulling. Mechanical methods that directly disturb soil by removing vegetation and exposing the soil surface increase potential for soil loss by wind and water erosion. If a soil crust develops while the soil is exposed, infiltration rates will decrease and runoff will increase. Soil compaction occurs on loosened soil when a disturbed area is reseeded, particularly if the soil is wet. Mowing and limited hand pulling would have minimal effects on the soil. Mowing would add litter to the soil surface.

Biological methods used to control weeds include grazing animals, insects, and pathogens. Overgrazing may reduce plant cover and expose soil to wind and water erosion. Compaction may also occur if overgrazing is allowed on wet soils. Potential impacts to the soil from insects and pathogens would be minimal (USDI, BLM 1989). Under proper management, grazing animals may increase the amount of litter on the soil surface.

Water Resources

An interrelationship exists between ground water and surface water resources in the natural system. This is most apparent in drainage basins with well developed alluvial aquifer systems. A typical drainage basin can have areas where the stream channel is gaining water from ground water (influent) or losing water to the ground water system (effluent). As such, changes in ground water quality can result in changes to surface water quality as a function of the interrelationship between the two water resources.

Continuing the current administration of the NWTF program has the potential to impact surface and ground water resources. This potential results primarily from weed control methods involving herbicides, tilling, mowing, and burning. Other methods used to control and eradicate noxious weeds (biological and cultural controls, prevention, education) pose little threat to surface water and ground water quality. The following sections describe the potential impacts of the program on surface water and ground water.

Surface Water

Herbicide Treatments

Herbicides may enter surface water either through non-point sources such as spray drift, erosion of soil containing herbicides, ground water discharge, irrigation return flows, and surface runoff. Point source problems such as improper cleaning, mixing, loading activities, and accidental spills of herbicides can also enter surface water.

Herbicides may reach the surface of watercourses during storms and remain in detectable concentrations for short periods. Information linking the use of herbicides to long-term impacts on surface water resources in Montana has not been documented.

The riparian zones associated with many surface watercourses may present severe limitations for the safe use of herbicides. These areas frequently have water at or near the ground surface, thereby increasing the potential impacts of herbicides.

The potential for a herbicide to reach surface water through runoff is a function of herbicide characteristics, application rate, soil type, slope, vegetation, the length of time between application and rainfall, and the presence or absence of a non-treated buffer between the application site and the surface water. Both picloram and 2,4-D have been reported to enter surface water through runoff. However, a study conducted by the EPA to measure runoff of picloram concluded that, under field conditions, picloram does not present a serious threat to water quality a short distance downstream from the application site (Evans and Duseja 1974). Runoff potential of clopyralid and dicamba should be similar to that of picloram. The relatively strong adsorption of

glyphosate to soil particles suggests it is unlikely to reach surface water through leaching, however, it may be detected in water if soil particles are moved into a watercourse during rainfall.


Leafy spurge

Herbicide drift from spray applications may directly enter surface water. The amount of spray drift depends on the herbicide formulation, size of droplets, amount of wind, and height above ground from which the spray is released. The use of application methods that allow better control (i.e., backpack or vehicle) and spraying during periods of little or no wind greatly reduces this threat.

The fate of some herbicides in surface water has been documented. Studies conducted on picloram in surface water indicate that it is degraded relatively rapidly by ultraviolet light. Hamaker (1964) found that 56% of picloram in water decomposed after exposure to direct sunlight for 9.2 days, 85% was decomposed in 30 days. The speed of photodecomposition in water is proportional to light intensity and depth of solution (Hedlund and Youngson, 1968). Environmental conditions were also shown to influence 2,4-D degradation in water. In warm, natural lake waters, 2,4-D degraded within 6 days compared to 80 days in cold, anaerobic water environments (DeMarco *et al.* 1967). Both photochemical and biological degradation influence rate of 2,4-D degradation (Warnock and Lewis 1978).

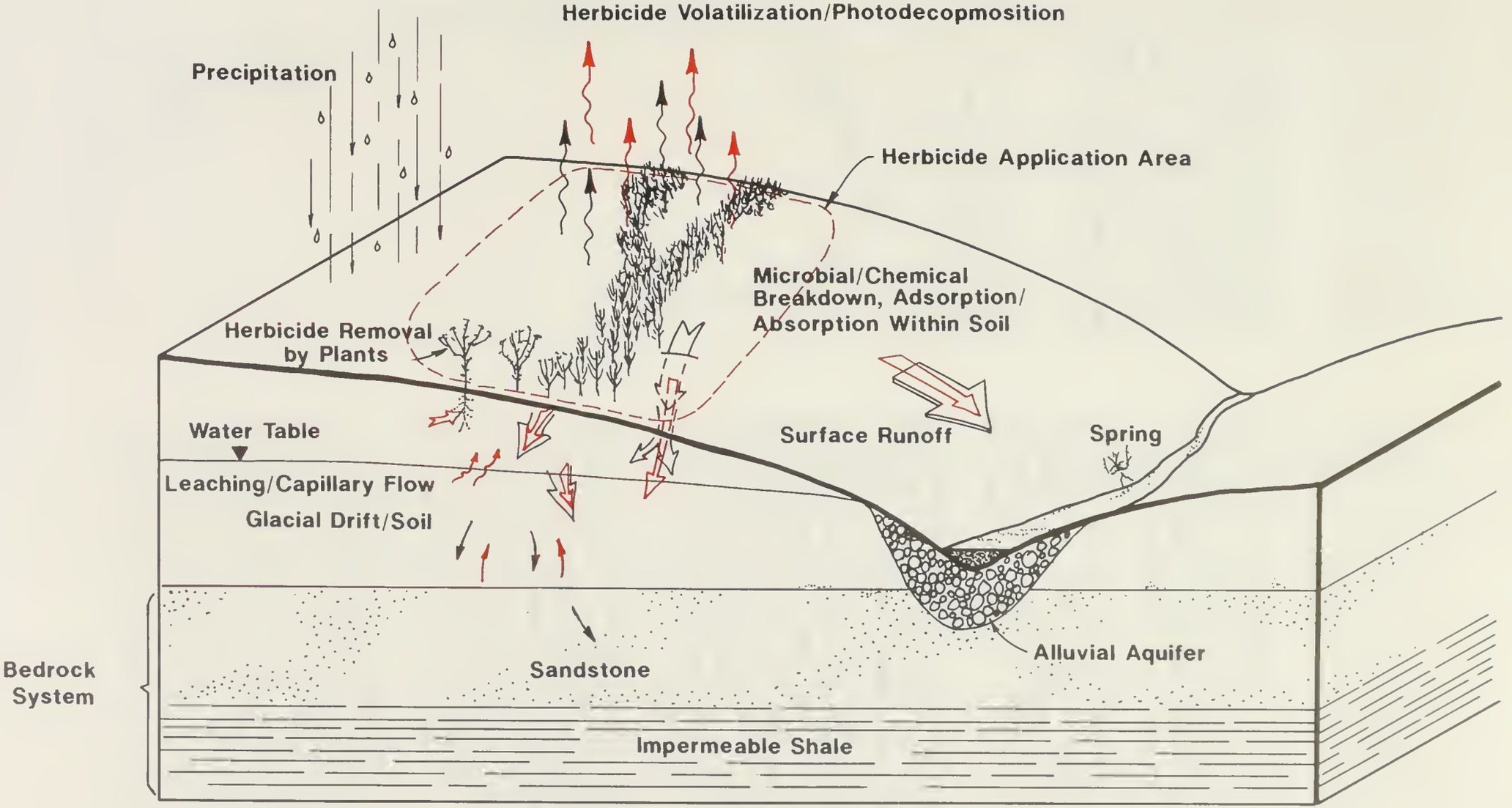
Other Treatment Methods

Other weed control methods may also impact surface water resources. Mechanical treatments such as tilling, burning, and mowing can result in increased sediment loading in water courses. These methods disturb vegetative cover and consequently can increase soil movement. Riparian habitats may be affected by introducing or encouraging intensive grazing in weed-infested areas.

The use of an integrated management approach for noxious weed control may involve the use of herbicides in selected areas. Under the integrated approach, areas identified as having high potential for surface water contamination would receive alternative methods of weed control, such as biological control or hand pulling. In some cases, herbicide application in sensitive areas might be possible by utilizing less persistent or mobile herbicides, lower application rates, or more selective application methods.

Ground Water

Ground water is an important source of domestic and agricultural water in Montana and must be protected from the introduction of herbicides. The ability of a herbicide to reach the ground water depends on soil properties, climatic conditions, depth to ground water, agricultural practices (e.g., irrigation, pumping wells), application and its chemical properties. Figure 6-1 presents an example of the source/pathway/receptor route through which herbicides may enter ground water. Once a herbicide reaches the



Herbicide Fate in the Environment
NWTF-Programmatic EIS
FIGURE 6-1

ground water system it is extremely difficult to remove. The rate at which a herbicide found in ground water is diluted, dispersed, or degraded depends on aquifer characteristics and herbicide properties.

Areas with relatively shallow water tables, unconsolidated sand and gravel materials, and rapid to moderately rapid permeable soils containing little or no organic matter are highly susceptible to ground water degradation by herbicides. In contrast, areas with greater depths to ground water and well developed, deep, organic soils are less prone to ground water impacts resulting from herbicide use.

Herbicide users must follow label directions to prevent impacts to the environment. Label directions and restrictions are based on EPA registration standards. Appendix F (DPEIS) contains herbicide labels of several products commonly used in Montana. Material Safety Data Sheets for these herbicides are contained in Appendix G (DPEIS).

Dalmatian toadflax

Picloram, 2,4-D, clopyralid, and dicamba are considered mobile in the soil environment. Product labels restrict applications of both picloram and clopyralid on sites with shallow water tables and soils with rapid to very rapid permeability.

Although the use of 2,4-D and dicamba are not restricted by label, they are also subject to leaching in soil. Glyphosate is more readily adsorbed by soil particles, and hence less mobile in the soil environment.

The method, frequency, and rate of herbicide application also affects the potential of the herbicide to impact ground water resources. Herbicides applied directly to the soil are generally incorporated and may be subject to less photodegradation, thus increasing amounts available for leaching. Application rate influences the potential of a herbicide to reach the ground water; generally the higher the application rate, the higher the concentration in the soil, and the slower the herbicide will degrade.

Herbicide impacts on ground water through point discharges (e.g., uncontrolled releases at mixing, loading, and storage facilities or accidental spills) are greater than those from non-point discharges because chemicals are often introduced at high concentrations. Contamination of domestic water supplies from point source discharges has been documented (DeLuca *et al*. 1989).

The 1989 Legislature recognized potential impacts from herbicide applications and consequently passed the Montana Agricultural Chemical Ground Water Protection Act (MACGPA). MACGPA is jointly administered by the MDA and the Montana Department of Health and Environmental Sciences (MDHES). The MDA has recently promulgated rules and the MDHES anticipates that its portion of the rules will be promulgated and adopted during 1992.

The passage of MACGPA may have a bearing on administration of NWTF cooperative group programs that involve the use of herbicides. The lack of a complete set of rules for the act's implementation makes it difficult to predict how administration of these projects may be affected.

Under MACGPA, MDA has the authority to designate areas as sensitive to potential chemical impacts and to limit or discontinue the use of certain chemicals in these areas. The designation of an area as sensitive to ground water contamination may be based on either identification of present pesticide problems or potential for future problems. It is likely that the potential impacts of herbicide application on ground water resources will be reduced under MACGPA.

In addition, the MDA is charged with development of Best Management Practices (BMPs) to provide agricultural chemical users and the general public with guidelines for the proper use of herbicides. BMPs would also specify guidelines for the safe mixing, storing, and disposal of herbicides purchased with NWTF monies, thereby reducing the likelihood and severity of both point and non-point source releases.

Wildlife

Herbicide Treatments

Impacts to wildlife could result from removal or reduction of vegetation that provides food and cover. Big game species which eat broadleaf plants and shrubs (e.g., pronghorn, mule deer, and white-tailed deer) as a large proportion of their diets could experience a reduction in preferred foods on lands where these species are eliminated or their density reduced by herbicide applications. The potential for reduction in desirable forb and shrub species is greater with herbicide applications on leafy spurge because of repeated applications of relatively high rates. Elk, which rely primarily on grasses, would benefit from selective weed control measures because grasses are likely to increase after herbicide treatment. Wildlife habitat can also be improved by selective weed control methods by eliminating a weed monoculture and replacing it with a more diverse plant community. Honey bees and other pollinating insects may be harmed by weed control efforts which remove both noxious weed infestations and non-target flowering plants. Honey bees gather nectar from spotted knapweed and other plants such as sweet clover to make honey (Kissinger 1991).

Wildlife could be affected through direct contact with chemical herbicides (e.g., spraying of nesting birds) or through ingestion of treated plants or contaminated drinking water (USDA, FS 1987). The risks to fish and wildlife from exposure to herbicides 2,4-D and glyphosate are discussed in detail in the Bureau of Land Management Final Environmental Impact Statement, Northwest Area Noxious Weed Control Program (1985). Potential impacts to wildlife from exposure to the herbicides clopyralid, dicamba, and picloram would be less than those for 2,4-D and glyphosate (USDI, BIA 1988). In general, herbicides pose little risk to wildlife because:

- Many species move away from spraying operations.
- Some herbicides degrade rapidly and most do not accumulate or persist in food chains.
- Small areas of habitat (relative to total habitat available) are treated.
- Herbicides applied at recommended rates are non-lethal to most species.

The potential for causing impacts to threatened and endangered species through weed control activities will be reduced as a result of the EPA's Endangered Species Program. This program will be implemented in 1992, with the intent to prevent harm to threatened and endangered species from the use of pesticides. Pesticide labels will contain restrictions on use for various counties and a supplemental label bulletin will be available that will contain:

- A list of pesticide active ingredients to which threatened and endangered species restrictions apply.
- An explanation of use restrictions that apply to each active ingredient.
- A list of threatened and endangered species to which restrictions apply.

- Maps or legal descriptions that show where, within counties, the restrictions apply.

Potential impacts to fish could result if herbicides enter streams through either accidental or direct application, drift, or transport of chemical residues from upland areas. Under routine circumstances, herbicide application could have slight impacts on fisheries. Introduction of a moderately toxic herbicide into surface waters in relatively large amounts could cause localized fish kills.

Other Treatment Methods

Mechanical methods of controlling noxious weeds during the nesting season have the potential to destroy nests and young of ground-nesting birds, as well as small mammals not able to avoid machinery. The use of cultivation would destroy habitat for both large and small game and non-game species until establishment of seeded species. Impacts to wildlife from these methods would be localized and would cause minor reductions in populations.

Prescribed burning has the potential to kill small mammals, reptiles, and birds unable to flee. Burning also would result in a temporary loss of cover and some shrub species used for forage. Burning in some cases could result in more dense weed regrowth than existed before treatment (USDA, FS 1986).

Biological control involving sheep or goats probably would displace some wildlife during the treatment period and could reduce forage for the treatment year. Other biological methods of weed control such as insects or microorganisms would have minimal effects on wildlife.

Potential impacts to threatened and endangered species could result if weed control activities are conducted near nesting sites of bald eagles and peregrine falcons. These species are sensitive to disturbance during nesting and brood rearing and may be forced from their nests by human activities. Such displacement could result in death of embryos in eggs, thermal stress to nestlings, and increased predation on nestlings.

Mechanical weed control, biological control with livestock, and prescribed burning could indirectly affect fish and other aquatic organisms through increased sedimentation. Removal of vegetation would result in potential short-term increases in surface runoff and sediment transport to streams. Generally, impacts would be minor because targeted areas would comprise only a small percentage of most watersheds.

Land Use

Continuation of the NWTF program as it is currently administered would result in limited impacts to land use. Increased grass production resulting from control of noxious weeds could improve wildlife and livestock distribution and increase numbers of animals that could be supported by an area. Weed prevention practices resulting in road closures could affect recreational use of some areas.

Air Quality

Two types of weed control methods used in NWTF projects have the potential to affect air quality: burning and herbicide treatment. The impact from burning would be minimal since it is not an effective method of controlling noxious weeds found in Montana. Limited burning may occur in areas to remove standing litter of noxious weeds prior to initiating other control measures. Because it is normally done during periods of atmospheric instability, weed burning is not likely to result in particulate emissions that exceed state ambient air quality standards.

Herbicide treatments from aerial and ground vehicles have the potential to affect air quality when chemical particles are suspended in the atmosphere. The impact on air quality depends on the type and concentration of these particles as well as the length of time they are suspended.

Spray drift, the movement of airborne spray particles from the target area, poses the greatest air quality concern. Extent of drift depends primarily on the size of the chemical droplets and wind speed. Liquid spray droplets most prone to

drift are ordinarily smaller than 100 microns in diameter (Klingman and Ashton 1982). Most spray equipment used in Montana is calibrated to produce spray droplets twice that size (200 microns). When herbicides are applied aerially in a 5-mph wind, the concentration of spray that drifts 100 feet downwind is less than 1% of that found on the target area (USDI, BLM 1985).

Research has shown that under certain meteorological conditions, highly volatile formulations of 2,4-D have the potential to drift for long distances (Robinson and Fox 1978). The effects of spray drift from herbicides containing picloram are less certain. The U.S. EPA (1985) acknowledged it could not determine if non-targeted plants are being damaged by picloram's drift and that damage might result from other factors, including applicator error, misuse, leaching, runoff, or persistence. Norris (1983) observed few effects of offsite drift of herbicides containing picloram on non-target vegetation, and concluded that spray drift was minimal.

Chemicals can also move through the air in volatilized (gaseous) form. Volatilization is reported to be negligible with glyphosate (WSSA 1983) and picloram (NRCC 1974). With 2,4-D, volatilization depends on the formulation; acids and amines are less volatile than esters, which vary from high to low. The oil-soluble amines are considered the least volatile. Dicamba may volatilize from soil surfaces, but further study is needed to determine the extent. Volatilization is not considered a problem with picloram or clopyralid due to low vapor pressure.

Cultural Resources

Some weed control methods, particularly mechanical, could affect cultural resources. Use of hard-edged tools or mechanical methods (tilling, roller chopping, or blading) could damage or destroy subsurface artifacts. Unearthing of cultural materials also may increase the possibility of artifact theft or vandalism (USDI, BLM 1989).

Prescribed burning may damage or destroy cultural resources, depending on depth to which artifacts are buried, temperatures to which they are exposed, and types of material from which they are made. Construction of firelines around prescribed fire boundaries also could harm subsurface cultural resources (USDI, BLM 1989).

Socioeconomic

Economic Impacts

The economic impacts related to continuation of the NWTF program are primarily beneficial. Direct economic benefits realized through local purchases of chemicals and application of herbicides amount to approximately $0.7 million per year from the NWTF program. Indirect economic benefits from the NWTF program are realized from farmers' and ranchers' perceptions that the state is actively participating in the fight against noxious weeds. Should the state government show little interest in helping control noxious weed problems, then less interest may be shown at the local level and fewer local expenditures would be made for weed control.

Continuation of the NWTF program would result in costs and benefits to state and local economies from weed control. The increase in noxious weed infestations, estimated at 5 to 24% annually, would remain approximately the same (USDA, FS 1986). Economic losses to the agriculture industry due to noxious weeds would persist. Expenditures for herbicides and weed control research would also continue at present rates.

Social Impacts

People confronted with loss of land productivity (usually farmers and ranchers) due to noxious weeds would likely consider alternative 1 to be a positive approach to dealing with weed problems. Those opposed to dispersal of chemicals into the environment would likely view it as potentially affecting human health and reducing environmental quality. This could increase their levels of concern if alternative 1 were selected.

Individuals may be concerned about the state's liability should the NWTF program be shown to affect the environment and human health. Lawsuits against the state for damages associated with herbicide use could be extremely costly, requiring taxpayers to "foot the bill." The

possibility of increased taxes to cover liability for a program perceived to benefit a small segment of society may be viewed negatively by some Montana residents.

Recreation and Visual Quality

Continuation of the NWTF program as it is currently administered would have few impacts on recreational resources. No long-term adverse impacts are anticipated from biological, chemical, or mechanical weed management. Short-term impacts could result from the use of chemical weed control or prevention measures. Road or facility closures within project areas in conjunction with weed control efforts would reduce or eliminate recreational uses in specific areas for limited periods. This could shift recreational pressure to other areas, causing a decline in recreational quality due to crowding or overuse. Enjoyment of recreational sites may be diminished if the management program causes a reduction in the vigor or amount of non-target vegetation.

Effects on the visual resource depend on weed control methods employed. Chemical control could change the vegetative composition of treated areas, causing a contrast between treated and untreated areas that may be visually unattractive. Chemical treatment could also change the pattern of colors in treated areas, especially during the flowering season. Impacts would most likely be short-lived, and contrasts would disappear as residual vegetation blended in with the surrounding landscape.

Mechanical and cultural control methods such as mowing, tilling, and burning, which result in disturbing the land and exposing bare soil, could also affect the visual resource. These methods are not widely used, however, and would probably be little noticed, especially in agricultural areas. Burning can affect visibility while it is in progress, and creates blackened areas that may not be pleasing to the eye. Because burned areas revegetate quickly, only short-term visual impacts are expected.

Biological weed control methods, prevention and education efforts would have little effect on visual quality. Examples of these activities that could affect the visual resource include utilization of grazing animals, altering fencing patterns, and installing informational signs. These management techniques are applied only to limited areas and would tend to blend with existing landscapes.

Human Health

Herbicide Treatments

Human health risks associated with herbicides used for noxious weed control have been documented in "Analysis of Human Health Risks of USDA Forest Service Use of Herbicides to Control Noxious Weeds in the Northern Region" (Monnig 1986). Conclusions in this report indicate that even when consideration is given to mixing errors and a variety of accident scenarios (e.g. spills, leaks, etc.), the "no observable effect levels" (NOEL) for human health are not exceeded. Health impacts to the general public are


Canada thistle

related either to direct contact with herbicides through spray drift, spills, and sprayed vegetation or to indirect contact through consumption of contaminated water, vegetables, fish, and grazing animals. The most serious human health risk, however, is through worker exposure. In 1988, draft rules for the Worker Protection Standards were published by EPA. To date, these rules have not been finalized. The purpose of the Worker Protection Standards is to establish standards for protection of persons who work on farms, forestry, nurseries, or greenhouses from occupational exposure to pesticides or pesticide residues. Standards established under these rules must be followed and will be referenced on pesticide labels.

Proposed revisions to the draft rules will require additional training and label directions including: identification of personal protective equipment; reentry restrictions; provisions for decontamination; and emergency medical treatment. The EPA also proposes to revise its pesticide labeling to include general worker protection, reentry intervals, personal protective equipment, and posting of treated areas.

Other Treatment Methods

Mechanical, manual, and cultural weed treatment methods, such as burning, mowing, tilling, and hand pulling, subject workers to smoke, burning materials, heavy machinery, skin irritants, and general hazards associated with field work. Operators of mowing machines, tillers, or other heavy machinery are prone to injury through accidents or contact with flying debris or brush. Hand pulling of weeds can expose workers to hazards such as poisonous snakes or noxious plants that cause blisters, inflammation, or dermatitis.

The integrated management approach includes aspects of some or all of the standard weed control methods. As a consequence, the impacts to human health are equal to or somewhat less than those described for both manual/mechanical and chemical methods. An integrated management approach which relies primarily on the use of herbicides would have greater potential human health impacts than methods employing predominantly biological controls. The EPA reregistration process will continue to evaluate acute and chronic toxicity affects. Label directions and restrictions will be modified to reflect the results of new data.

ALTERNATIVE 2 -- GENERAL MODIFICATIONS TO THE EXISTING NWTF PROGRAM

DIRECT IMPACTS

As with alternative 1, the direct impacts associated with alternative 2 are primarily economic impacts and liability issues. Because NWTF administrative costs would increase from the current (FY '93) 9.1% to an estimated 9.6% of the program budget, less money would be available for weed control grants. The projected increase in administrative costs is a reflection of adding a .5 FTE specialist to aid in project review and evaluation. Current (FY '93) budgeted expenditures for administrative costs are:

Noxious Weed Advisory Council	$ 13,881.00
Herbicide Surcharge Collection	5,571.00
Weed Coordinator	44,253.00
Program Assistant	20,651.00
Legislative Indirect Costs	36,051.00
TOTAL	$120,407.00

Projected expenditures under Alternative 2 are:

Noxious Weed Advisory Council (1 less meeting per year)	$11,651.00
Herbicide Surcharge Collection (no longer needed due to legislative changes)	0
Weed Coordinator (reduced travel)	42,702.00
Program Assistant	20,651.00
.5 FTE Specialist (includes travel and operations)	21,753.00
Legislative Indirect Costs (based on increased personal services)	38,335.00
TOTAL	$135,092.00

There would be a net reduction to the grants program of $15,045.00.

The addition of an employee, agency liaison, or contracted services would allow the MDA to review each application for compliance with MEPA, reduce potential state liability, and improve project evaluation.

Potential liability for the State of Montana associated with alternative 2 would be reduced through the expanded environmental assessment (EA) afforded under this alternative. The MDA would be able to provide more scrutiny of individual grant applications, identify data gaps for sensitive resources, complete field evaluations for each project, improve documentation and performance appraisal of the program, and aid grant applicants in the preparation of grant proposals.

Better documentation of the program would help protect the state from responsibility under other laws (i.e., Clean Water Act, Clean Air Act, Comprehensive Environmental Cost Recovery Act (CECRA), Montana Pesticides Act, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Montana Agricultural Chemical Ground Water Protection Act, and the Safe Drinking Water Act).

INDIRECT IMPACTS

Vegetation

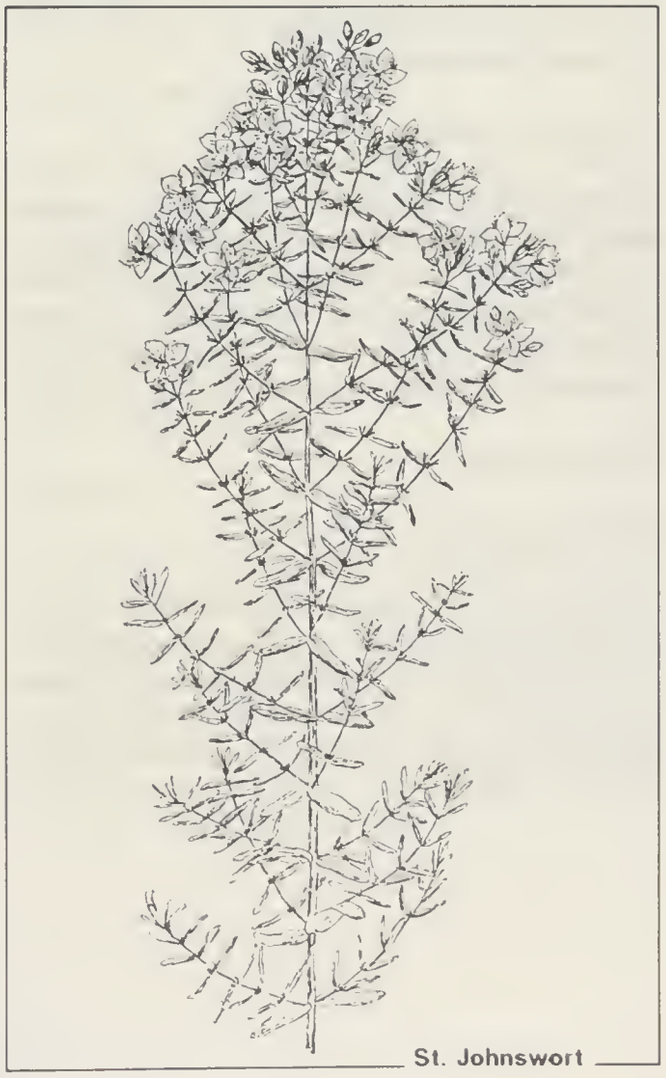
Modifying the NWTF program to integrate additional environmental information into decision-making or grant approval would potentially reduce impacts to threatened, endangered, or sensitive plants. The MDA could specify that populations of special-status plants be identified and avoided. Monitoring to ensure that grant recipients comply with such conditions would increase the potential to mitigate impacts to special-status plants; however, because these plants have no legal status and the state has no policy to manage them, conditioning grant approval on their avoidance may be difficult.

Soils

Requiring grant applicants to provide information on site characteristics, including topography, wetlands, proximity to streams, water table depth, and soil depth and texture, could help mitigate potential impacts. Through the EA process, the MDA could assist grant applicants In choosing weed control methods compatible with site-specific conditions. Mitigation of impacts could consist of restricting some weed control methods where surface and ground water may be degraded, where soil loss potentials are severe, or where herbicide persistence or soil compaction could occur.

Water Resources

Under alternative 2, the MDA would assure compliance with MEPA through environmental review of project proposals. This review would identify areas sensitive to ground water and surface water contamination and would have the authority to condition grant approval on protection of these resources. The environmental review, along with continued emphasis on integrated weed management, would enhance protection of ground water and surface water resources.



St. Johnswort

Wildlife

Requiring grant applicants to obtain information on nesting and habitat use in the project area by threatened and endangered species (bald eagle, peregrine falcon, piping plover, and least tern) and other non-threatened species would allow implementation of measures to mitigate effects on these species. Mitigation would consist of restricting weed control activities near nesting sites during the nesting and brood-rearing period (April through August). Funding for grant applicants could be made conditional on mitigating impacts to important wildlife and their habitat.

Land Use

Administrative modifications to the NWTF grants program would have limited impacts on land use.

Air Quality

Impacts to air quality resulting from implementation of alternative 2 would remain essentially the same or slightly lower than the impacts described for alternative 1.

Cultural Resources

Modification of the NWTF program to require additional environmental information, more administrative control, and better monitoring could have positive impacts on cultural resources. Prior to authorizing a noxious weed control project, cultural resources could be identified and avoided.

Socioeconomic

Economic Impacts

The costs and benefits to the economy under this alternative would be similar to those for alternative 1. Increased administrative costs of the NWTF program would result in somewhat less money spent for research, education, and direct control of noxious weeds.

Social Impacts

Many persons may oppose modifying the NWTF program to require additional environmental information or conditioning approval of grants on monitoring certain species or site conditions. An opinion survey of grant recipients and others associated with the program indicated that most feel the current paperwork and administrative control of the program is adequate. It is generally perceived that grant monies are more effectively spent on weed control measures rather than on more extensive environmental review or administrative control.

Some members of the public may consider additional administrative control, environmental review, and environmental monitoring of grant projects to be positive measures to help ensure MEPA compliance and prevent potential impacts on sensitive components of the environment. These people would perceive additional environmental evaluation and administrative control as a small price to pay for enhanced accountability and regulation of projects with potential to impact human health and the environment.

Recreation and Visual Quality

Since the management techniques employed under this alternative would remain essentially the same as those used in alternative 1, impacts on recreation would be negligible.

Implementing alternative 2 would have little effect on visual resources. Since the management techniques employed under the NWTF program would remain basically the same, the impacts associated with this alternative would be similar to those described in alternative 1.

Human Health

Enhanced environmental review of grant proposals under alternative 2 will result in an increase in environmental and project information for decision making purposes, improved awareness of proper weed management, and minimization of human health risks associated with future projects.

ALTERNATIVE 3 -- DISCONTINUATION OF THE NWTF PROGRAM

DIRECT IMPACTS

The NWTF represents a unique approach to noxious weed control in Montana. The focus of the program is to fund local cooperative weed control projects and to promote noxious weed research and education. The NWTF program recognizes that weed infestation problems are not defined by political boundaries and provides cost-share funds to groups that manage noxious weeds irrespective of those boundaries.

Termination of the NWTF would result in the money being divided among all counties, according to rules to be adopted by the MDA. Responsibility for public noxious weed control would remain at the county level, reducing the effectiveness of weed control due to problems associated with political boundaries and lack of coordinated efforts among private landowners. It would also greatly impact the biological control program in Montana, by slowing the screening, rearing, and redistribution of insects and pathogens. This would delay the development of long-term, cost-effective weed control. Research and educational programs on noxious weeds would also be reduced.

Direct impacts associated with the discontinuation of the NWTF program would include the economic impact of less money being available for control of noxious weeds. The net effect would be a reduction in the overall control of noxious weeds and subsequent reduction in the value of weed-infested lands. Other impacts would include reduced agricultural income from weed-infested lands, reduced wildlife habitat, and the environmental impacts discussed in Chapter 2. The rapid spread of weeds would cause economic and environmental impacts to increase as more areas became infested.

With this alternative, potential future state liability for remediation of environmental problems associated with noxious weed control would be eliminated. As a consequence, the impacts to state government would be negligible.

INDIRECT IMPACTS

Vegetation

Without the NWTF program, it is likely that fewer weed-infested areas would be treated. Reduced control would lead to expansion of areas infested with noxious weeds and increased losses of desirable plants. Noxious weeds would eliminate or reduce many desirable plant species through competition for growing space, moisture, and nutrients or through secretion of chemicals which inhibit the growth of many native plants.

Soils

Abandoning the NWTF program would eliminate soil impacts caused by weed management projects funded by the NWTF. Although impacts associated with the NWTF program would cease, soil impacts would continue due to weed management programs conducted by county, state, and federal agencies and the private sector. Accelerated soil loss, which occurs when tap-rooted weeds replace native grasses, would increase as weeds continued to spread.

Water Resources

Abandoning the NWTF program would eliminate any state liability associated with environmental degradation of water resources that could result from the misapplication of chemical herbicides. Since the NWTF accounts for approximately 5% of the chemical weed control conducted in the state, the potential for water resource impacts still exists.

Wildlife

Abandoning the NWTF program would reduce the potential to destroy non-target plants, but it would also allow noxious weeds to increase, thus reducing plant diversity and habitat value for elk, deer, and other wildlife. Failure to control or limit the spread of noxious weeds such as knapweed and leafy spurge could reduce the long-term productivity of palatable plants.

Land Use

If the NWTF program were abandoned, land use of infested areas could change. Although livestock grazing would remain the dominant use of rangeland, the type of livestock grazed may change from cattle to sheep. As productivity of the land further declined, some areas could revert to non-use.

Air Quality

Discontinuing the NWTF program would have an insignificant impact on air quality.

Cultural Resources

Discontinuing the NWTF program would have an insignificant impact on cultural resources.

Socioeconomic

Economic Impacts

Because weed infestation rates would be somewhat higher if the NWTF were abandoned, costs to both statewide and local economies would increase at a faster rate than under alternative 1 or 2. Land values would also decrease at an accelerated rate and lost revenues to both local government and business would increase at a faster rate than under alternative 1 or 2. Under alternative 3, the benefits from NWTF expenditures for local purchases of chemicals and income from application of herbicides would not be realized. Assuming that weed control on private, state, and federal lands would decline because of lack of coordinated efforts, the cost to ranchers would increase through decreased livestock production, decreased land values, and increased weed management costs.

Social Impacts

Persons relying on the NWTF program to assist in noxious weed research and control would lose a source of funding with this alternative, which could cause them concern. Some people would reduce their weed management efforts as a result or perhaps use other funds to carry out weed management and research programs.

Abandoning the NWTF program would be favored by individuals who oppose the use of herbicides or consider their use to be ineffective in controlling the proliferation of noxious weeds. Some people may not be aware that the NWTF program sponsors a variety of weed management techniques.

Recreation and Visual Quality

Discontinuing the NWTF program would reduce the short-term impacts on recreation described in alternative 1. Since these impacts were expected to be minimal, few differences in recreational experience would be realized by abandoning the program.

Abandoning the NWTF program could have some effects on the visual resource. For weed species that are considered attractive, the impact would be positive; for species considered unattractive, the impact on visual quality would be negative. Since most impacts of weed control on the visual resource are short-term, effects of discontinuing the program would be minimal.

Human Health

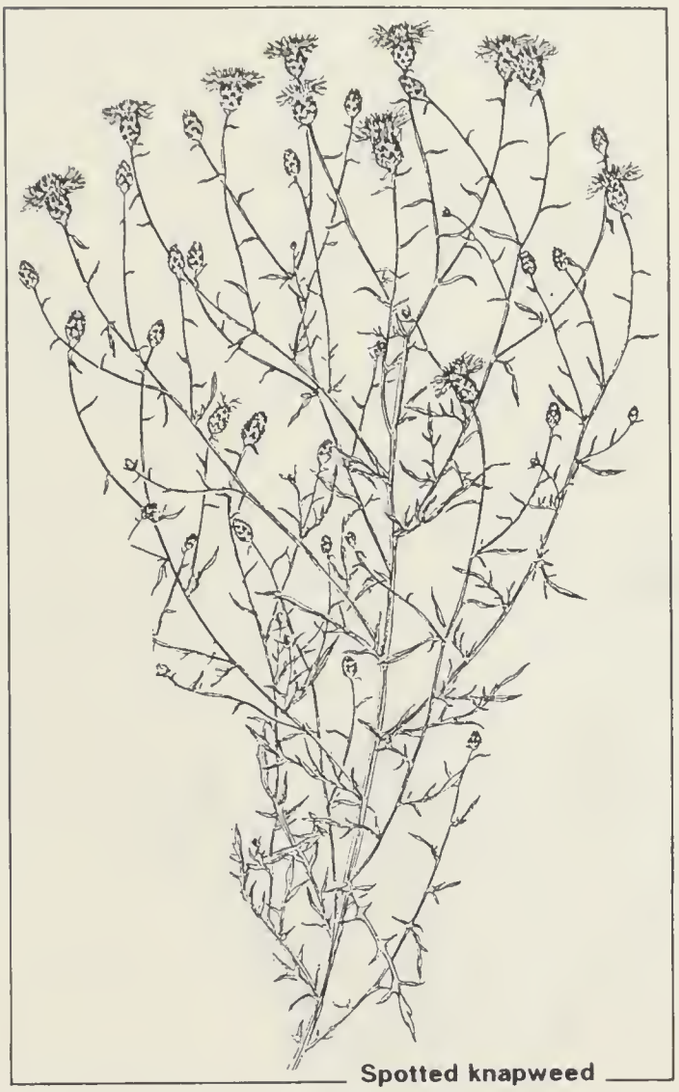
Since the NWTF accounts for only 10% of the chemical control of noxious weeds in Montana, abandoning the program would not greatly affect the potential human health hazards that result from chemical weed control.

CUMULATIVE IMPACTS

The NWTF program represents approximately 10% of the chemical noxious weed control effort in Montana. This percentage is based on total herbicide sales in the state and the estimated portion of these sales that apply to noxious weed and non-cropland weed control. The remaining 90% of herbicides purchased for non-cropland and noxious weed control is under other state, federal, local, and private programs.

Cumulative adverse impacts resulting from herbicides and other weed management methods

noxious weeds, development of cooperative weed management projects among state, federal, and private organizations, and promotion of integrated methods for managing weeds. The loss of NWTF revenue for cooperative weed management projects involving integrated weed management methods would greatly reduce the number of cooperative projects between private, state, and federal entities.


Spotted knapweed

Since its inception, the NWTF Act has allocated 33% of total revenue toward support of non-chemical weed management programs. These monies have accounted for 50% of the state's biological research effort, in addition to supporting other weed research and education programs. Loss of revenue for biological research, other weed research, and education programs would have a significant cumulative impact on the weed management effort in the state.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible commitments of resources result when resources are altered to the point that they can be renewed only after 100 years or more. The primary irreversible commitment of resources would be the use of fossil fuels to manufacture and apply herbicides. Alternatives 1 and 2 would require the greatest fuel consumption.

An irretrievable commitment of resources is the loss of opportunity for production or use of renewable resources for a period of time. Changing future management could restore lost opportunity or production. Irretrievable resource commitments would result from localized changes in native vegetation and wildlife habitat from noxious weed control activities.

PREPARERS AND REVIEWERS

Chapter 7

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CHAPTER 7

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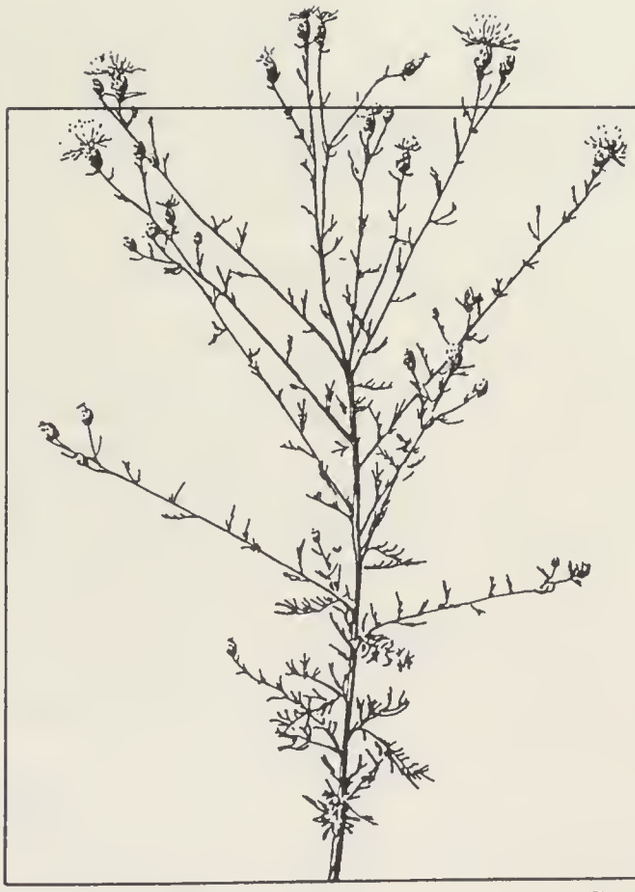
AGENCIES AND OTHER ENTITIES CONTACTED



Chapter 8

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AGENCIES AND OTHER ENTITIES CONTACTED

FEDERAL

Bonneville Power Administration
U.S. Department of Agriculture
- Agricultural Research Service
- Animal and Plant Health Inspection Service
- Forest Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Fish and Wildlife Service
- National Park Service

STATE

Department of Administration
Department of Agriculture
Department of Commerce
Department of Fish, Wildlife, and Parks
Department of Health and Environmental Sciences
Department of Transportation
Department of Justice
Department of Natural Resources and Conservation
Department of State Lands
Environmental Quality Council
Montana Natural Heritage Program
Montana State University
- Agricultural Experiment Stations
- Animal and Range Science Department
- Entomology Research Lab
- Extension Services
- Plant and Soil Sciences Department

University of Montana
- Botany Department

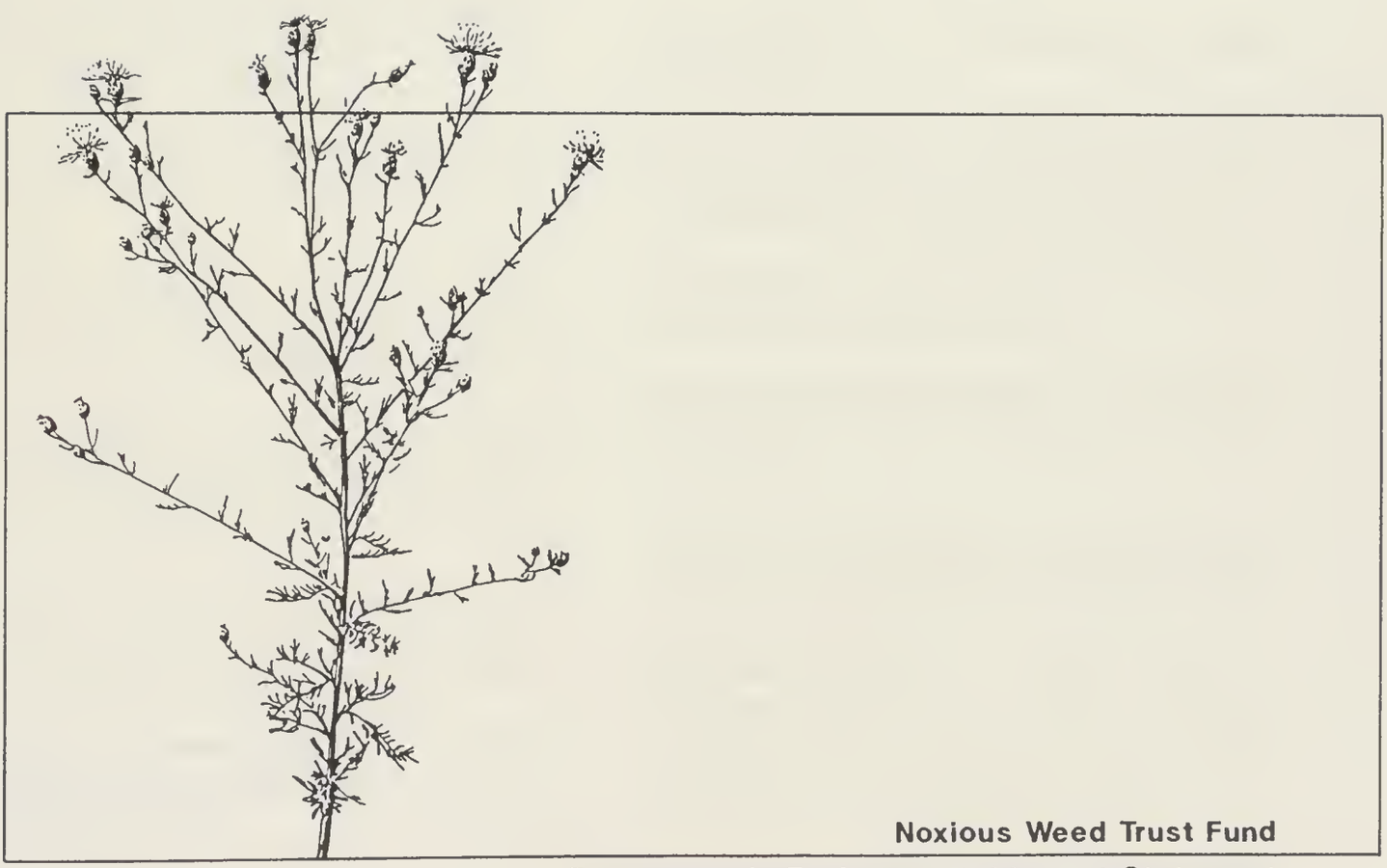
LOCAL

Big Horn County Weed Supervisor
Carbon County Weed Supervisor
Carter County Weed Supervisor
Cascade County Weed Supervisor
Chouteau County Weed Supervisor
Deer Lodge County Weed Supervisor
Fallon County Weed Supervisor
Flathead County Weed Supervisor
Gallatin County Weed Supervisor
Granite County Weed Supervisor
Headwaters Resource Conservation and Development, Range Weed Committee
Hill County Weed Supervisor
Jefferson County Weed Supervisor
Lake County Weed Supervisor
Lewis & Clark County Weed Supervisor
Lincoln County Weed Supervisor
Madison County Weed Supervisor
Mineral County Weed Supervisor
Missoula County Weed Supervisor
Powder River County Weed Supervisor
Richland County Weed Supervisor
Roosevelt County Weed Supervisor
Silver Bow County Cooperative Extension Service
Silver Bow County Weed Supervisor
Stillwater County Weed Supervisor
Stillwater County Cooperative Extension Service
Sweet Grass County Weed Supervisor
Teton County Weed Supervisor
Toole County Weed Supervisor
Treasure County Weed Supervisor
Valley County Weed Supervisor
Wibaux County Weed Supervisor
Yellowstone County Weed Supervisor

OTHERS

Burlington Northern Railroad
Champion International
Montana Power Company
Montana Association of Counties
Montana Dakota Utilities
Montana Weed Control Association
Noxious Weed Trust Fund Advisory Council
Noxious Weed Trust Fund Grant Recipients
Pioneer Weed Control
Plum Creek Lumber Company
The Nature Conservancy

GLOSSARY



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GLOSSARY

ACTIVE INGREDIENT: The pesticide compound or toxicant which produces the desired effect against the target pest. Pestlcide formulatlons are typically 1% to 50% active ingredient (a.i.) the remainder being carriers, solvents, emulsifiers, etc.

ACCEPTABLE DAILY INTAKE (ADI): The daily dosage of a chemical, which, during an entire lifetime, appears to be without appreciable rlsk on the basis of all the facts known at the time. ADI is expressed in milligrams of the chemical, as it appears in food, per kilogram of body weight (mg/kg/day).

ADSORPTION: Pertaining to soils, it is the adhesion of molecules of a gas, liquid, or dissolved substance to the surface of soil particles.

AMINES: Any of a group of chemical substances derived from ammonia in which one, two, or three hydrogen atoms have been replaced by one, two, or three hydrocarbon groups.

AQUIFER: An underground zone of earth or rock saturated with water whose upper limit is the water table.

BIOLOGICAL CONTROL: The use of natural enemies to control a target plant, retard or prevent growth, and/or prevent seed formation.

CATION EXCHANGE CAPACITY: The sum total of exchangeable cations that a soil can adsorb, expressed in milliequivalents per 100 grams of soil, clay, or organic colloid.

COLLUVIAL: A general term applied to loose and incoherent deposits, usually at the foot of a slope or cliff and brought there chiefly by gravity.

DEFOLIATE: To cause the leaves of a tree (or other plant) to fall off, especially by the use of chemical spray or dust.

EFFLUENT STREAM: A stream flowing out of another or forming the outlet of a lake.

ESTER: A compound formed by the reaction of an acid and an alcohol, generally accompanied by the eliminatlon of water.

EVAPOTRANSPIRATION: A combination of the actions of evaporation and transpiration of water from plants and nearby soils. Evaporation is vaporization of water from plant surfaces and soils. Transpiration is a physiological process of evaporation from plant pores.

GROUND WATER: Water residing in the lnterstices of soil and rock below the ground surface.

HERBACEOUS: A plant having little or no woody tissue and usually persisting for a single season.

HERBICIDE: A chemical used to control, suppress, or kill plants, or to severely interrupt their normal growth processes.

INFILTRATION: The downward entry of water into the soil.

INFLUENT STREAM: A stream or stretch of a stream is influent with respect to ground water if it contributes water to the zone of saturation.

LEACHING: The vertical or downward movement of chemicals through soil by water.

MICROBIAL DEGRADATION: The breakdown by bacteria of chemical substances into simpler components.

MOBILITY (HERBICIDE): The capability of a herbicide to be moved easily within soil, vertically or laterally, with the normal movement of water.

NONPOINT SOURCE: A diffuse source of pollutants resulting from the activities of man over a relatively large area, the effects of which normally must be addressed or controlled by a management or conservation practice.

NONTARGET VEGETATION: Vegetation which ls not targeted for control with various treatments.

PATHOGENS: A specific causative agent of disease, such as a bacterium or virus.

PERSISTENCE: The resistance of a herbicide to metabolic and environmental degradation.

pH: A numeric value that gives the relative acidity or alkalinity of a substance on a 0 to 14 scale with the neutral point at 7.0. Values lower than 7.0 show the presence of acids, and values greater than 7.0 show the presence of alkalis.

PHOTODECOMPOSITION (PHOTODEGRADATION): The breakdown of a substance, especially a chemical compound, into simpler components by the action of sunlight.

POINT SOURCE: Any discernible, confined or discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or vessel or other floating craft, from which pollutants are or may be discharged.

RESIDUE: That quantity of herbicide, its degradation products, and/or its metabolites remainlng on or in the soil, plant parts, animal tissues, whole organisms, and surfaces.

RIPARIAN: Pertaining to or located along a streambank or other water bodies, such as ponds, lakes, reservoirs, or marshes.

VOLATILITY: A measurement of the tendency of a herbicide to vaporize into the atmosphere.

WEED: A plant growing where it is not desired.

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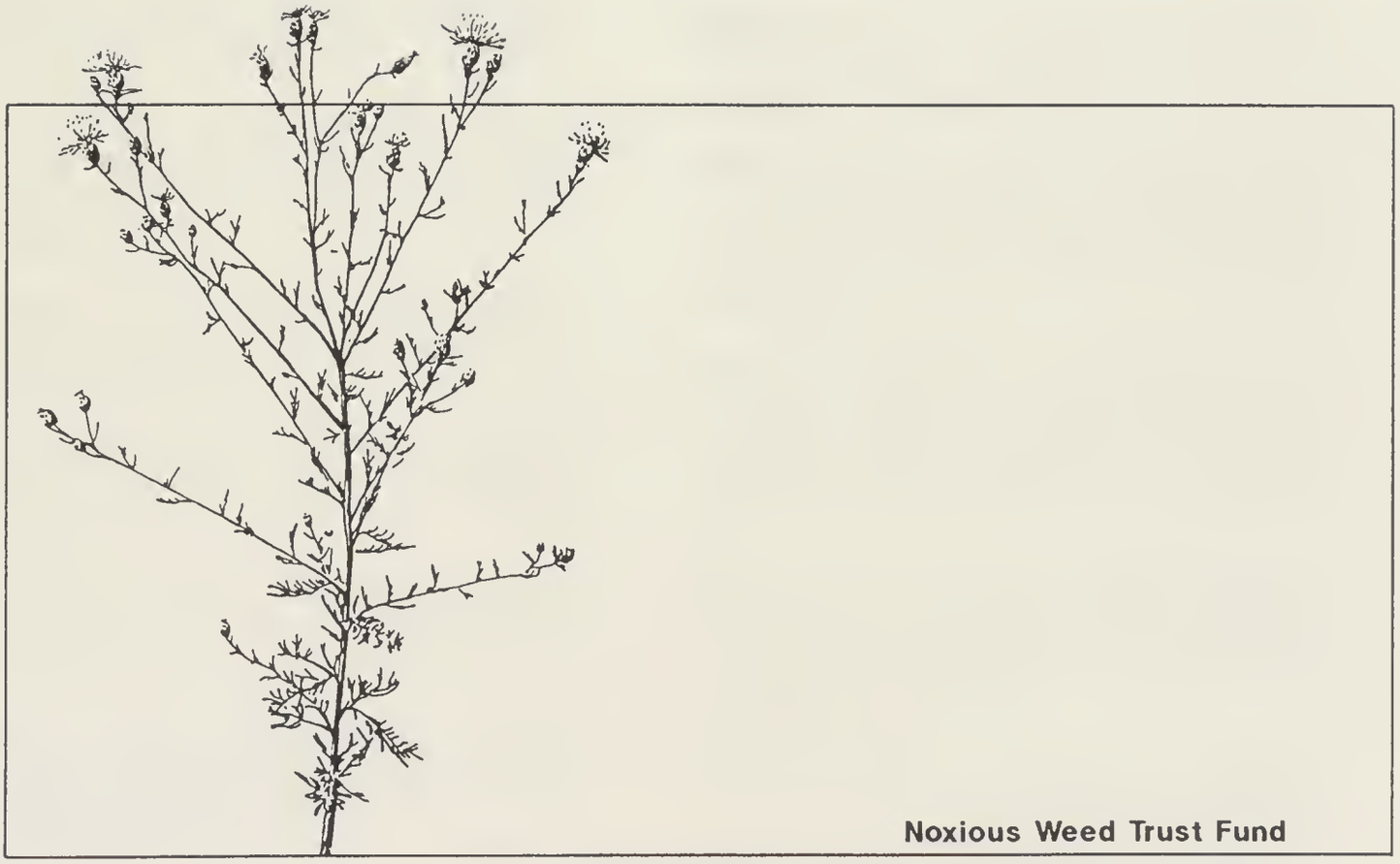

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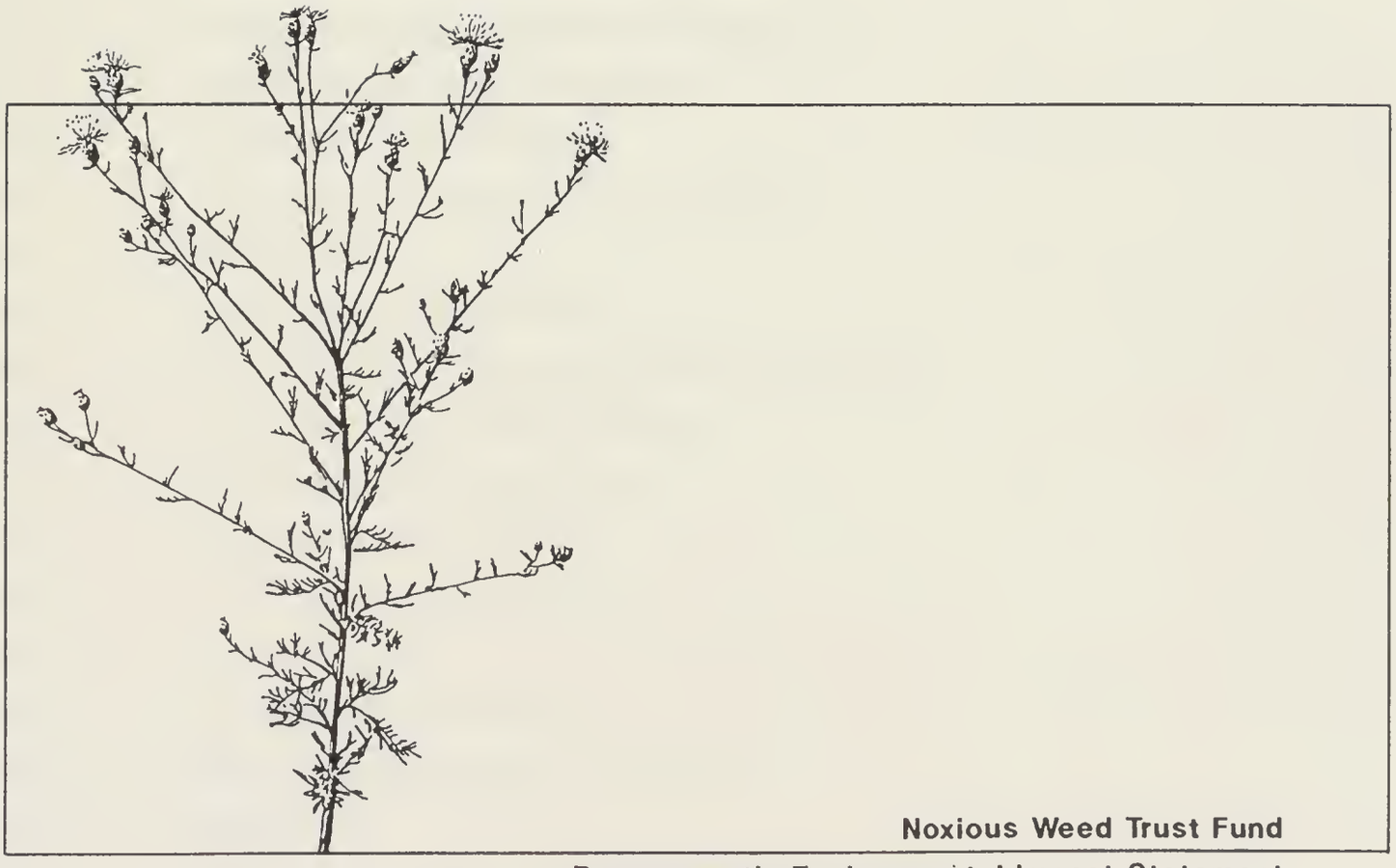
COMMENTS AND RESPONSES



Noxious Weed Trust Fund

Programmatic Environmental Impact Statement

COMMENTS AND RESPONSES

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

The agencies received 34 letters commenting on the PEIS. In addition, at the public hearings held in Helena on January 10, 1992, and Billings on January 13, 1992, a total of 6 people presented verbal testimony. Starting on the next page, this chapter reproduces each letter and testimony in full. Alongside each letter and testimony are the MDA responses.

Letter 28	Lake County Soil Conservation District
Letter 29	Lewis and Clark County Weed District
Letter 30	MSU, Department of Plant and Soil Science Extension Office
Letter 31	Ted Lucas
Letter 32	Montana Environmental Information Center
Letter 33	Montana Department of Health and Environmental Sciences, Water Quality Bureau
Letter 34	U.S. Department of the Interior, Bureau of Reclamation

DPEIS HEARING, HELENA, JANUARY 10, 1992

Testimony 1	Charlie Hahnkamp

DPEIS HEARING, BILLINGS, JANUARY 13, 1992

Testimony 1	Dave Pickett
Testimony 2	Neil Peterson
Testimony 3	Larry Beneker
Testimony 4	Bob Carlson
Testimony 5	Mary McKone

Letter #1

GARFIELD COUNTY CONSERVATION DISTRICT
Hwy 200 & Kramer Street
Box 369 Jordan, Montana 59337
Phone: (406) 557-2232

Date: December 18, 1991

Weeds DPEIS
Montana Dept of Agriculture
Agricultural & Biological Sciences Div.
Captiol Station
Helena, MT 59620

The Garfield County Conservation District supports the Noxious Weed Trust Fund Program. We feel it is an important program in Montana and would like to see the continuation of the existing program.

Sincerely,
Sonja Turner
Sonja Turner, Secretary
Garfield Co. Cons. Dist.

Thank you for your comments.

Letter #2

MONTANA STATE UNIVERSITY
Extension Service
Department of Animal and Range Sciences
Montana State University
Bozeman, Montana 59717
406-994-3414

December 31, 1991

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

To Whom It May Concern:

I recently reviewed the Draft EIS on the Montana Noxious Weed Trust Fund Program. My comments are discussed below.

Overall, the material in the EIS was logically organized and easy to read. I feel that the major items (background on laws, history of noxious weeds, description of the grants program, description of affected environment, program alternatives, and the impacts of the program) required in a programmatic EIS are included. Chapter 2 was especially well-written.

The information presented in Chapter 3 is very interesting. It appears that the Cooperative Group Projects are logically allocating funds between herbicides, biological control agents, and integrated weed management strategies. In addition, the results of the Cooperative Group Projects in Silver Bow County, Granite County, and Madison County clearly demonstrate the positive benefits of the weed control program. For noxious weed control in Montana, it is critical that a certain percentage of the NWT Funds support the cooperative projects.

I also feel that NWT funds have been extremely valuable for biological research, other research, and educational programs. Without their support, the noxious weed control efforts by research and extension personnel at Montana State University would have been significantly reduced. Therefore, I recommend that the current practice of allocating a certain percentage of the funds to support weed research be continued.

A The information in Chapter 4 is confusing. As briefly mentioned on page 4-1, no plants found in Montana were classified under the Federal Endangered Species Act as threatened or endangered. Therefore, it is a bit misleading to see the list of species considered by the Montana Natural Heritage Program. Perhaps the significance of their list should be explained in greater detail.

The three program alternatives (described in chapter 5) present a diverse set of weed control strategies. In general, I feel that the existing program has been valuable to Montana. However, modifications to ensure compliance with MEPA and NWTF rules are

A The Endangered Species Act, a federal law, provides protection to threatened or endangered plants throughout the United States. Currently, no plants in Montana are listed as threatened or endangered. The Act applies to all lands regardless of ownership.

Federal agencies also develop lists of sensitive plants which are provided protection to ensure that these plants do not become susceptible to extinction. Federal sensitive plants are only protected on federal lands. Federal sensitive plants in Montana include candidate species for federal listing, as well as other plants considered to need special protection.

Impacting individual sensitive plants or portions of populations is not prohibited unless the viability of populations within the region is threatened. The intent of the sensitive plant designation is to ensure that populations do not become susceptible to regional extinction.

The Montana Natural Heritage Program, funded by the State of Montana and The Nature Conservancy (a non-government entity), has developed lists of plants considered to be threatened, endangered, rare, or sensitive. The Heritage list usually includes candidates for listing under the Endangered Species Act, federal sensitive plants, as well as other species deemed to be of concern because of rarity, limited distribution, threats to habitat, or other factors that could jeopardize the viability of populations. Special status plants listed by the Natural Heritage Program have no legal protection on state or private lands, but could be protected on federal lands if these plants also are federal sensitive species. The Montana Natural Heritage Program's list of special status plants is included in the EIS so that potential impacts to these plants can be avoided, if possible.

Letter #3

LINCOLN COUNTY WEED & RODENT BOARD
418 Mineral Avenue
Libby, MT 59923
(406) 293-7781, ext 260
1-800-824-3275, ext 260 within Lincoln County

January 3, 1992

Weeds PDEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620

Dear Director Snortland:

I am, as is our board, pleased to participate in the programs of the Noxious Weed Trust Fund. We feel that because of the impact of the monies and direction provided through the grant process, our local weed management program is a much more effective program.

It was only after applying for the Tobacco Valley Weed Management Grant that our board became directly and thoroughly involved in all aspects of weed management. Without this "shot in the arm", that change might not have happened. Currently we have 26+ noxious weed project areas in Lincoln County, only one of which uses monies from the Noxious Weed Trust Fund. That carrot is still used, however, with landowners to foster cooperative programs.

The only weakness we can see is a lack of documentation of the environmental effects of the noxious weeds in the project areas. Getting that information is often difficult and should not preclude grant funds being issued from the trust fund. We would like to see Program Alternative 1 continued into the foreseeable future.

Thank you very much for the opportunity to comment on this draft Programmatic Environmental Impact Statement.

Sincerely,

Robert E. Wilson
Integrated Pest Management Specialist

Thank you for your comments.

probably needed to improve the effectiveness of the program and to ensure its long-term viability. (Annual site visits and field evaluations by MDA staff are needed to ensure that a "quality" program is being conducted.) Research and education projects also need to be monitored. Therefore, I support Alternative 2. However, I feel it is extremely important that only a small percentage (5-10%) of the total funds be used to administer the program. Most of the funds should be used for weed control, research, and education.

Thank you for allowing me to comment on the EIS.

Sincerely

John L.

John R. Lacey, PhD
Extension Range Management Specialist
Montana State University

JL:pk

cc: Sandy Gagnon, Acting Dept. Head

Letter #4

January 6, 1992

Mr. Everett Snortland, Director
Montana Department of Agriculture
Agricultural & Biological Sciences Division
Capitol Station
Helena, Montana 59620-0205

Re: Weeds DPEIS

Dear Mr. Snortland:

The Hill County Weed Board and the Hill County commissioners have reviewed the Draft Programmatic Environmental Impact Statement on the Montana Noxious Weed Trust Fund grants program and would like to go on record as supporting Alternative 1.

The Hill County Weed District, like other weed districts, operates within the parameters of a limited resource base. Comprehensive integrated noxious weed management programs have proven effective in Hill county but their implementation has normally intensified competition for available resources. Participation in the Noxious Weed Trust Fund grants program, however, has allowed the local weed district to initiate several extensive eradication and control programs within the county without compromising existing efforts. Preliminary data suggests that these programs have been very successful. It is doubtful that these efforts could have been initiated without funding and support from the Noxious Weed Trust Fund grants program.

The Hill County Weed Board and the Hill County commissioners feel that the Noxious Weed Trust Fund is a valuable tool in resisting noxious weed infestations and that the program should continue as is. Reducing the fund level, reconfiguring the structure of the fund or delaying the distribution of grant monies due to bureaucratic posturing will exacerbate the propagation of noxious weeds, given their dynamic nature, and could have potentially dire implications for Montana landowners and producers. Agriculture, after all, is still the primary "basic industry" in Montana.

Terry Turner

Terry Turner, Hill County Weed District supervisor

Bob Siebrasse

Bob Siebrasse, Hill County Weed Board Chairman

Nora Nelson

Nora Nelson, Chairperson

Kathy Bessette

Kathy Bessette, commissioner

Lloyd Wolery

Lloyd Wolery, commissioner

Thank you for your comments.

Letter #5

MONTANA STATE UNIVERSITY | Extension Service
Fallon-Carter County Extension Office
10 West Fallon (Courthouse)
PO Box 850
Baker Montana 59313
406-778-2883

January 6, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Division
Capitol Station
Helena, Montana 59620-0205

Dear Sirs:

As Fallon-Carter MSU Extension Agent I have witnessed several instances where funding from the Montana Noxious Weed Trust Fund has initiated organized community-wide efforts to identify a noxious weed problem, and to initiate action. A few examples follow from Fallon, Carter, and Southeastern Montana:

1. Dugout Creek Leafy Spurge: Grant provided impetus for community to organize neighbors to start working together and a total program has continued since 1986.

2. Cottonwood Knapweed: 1986 grant provided financial assistance to eliminate 220 acres of Russian Knapweed from the area. Less than 5 acres of Russian Knapweed exists today.

3. Eight County Spotted Knapweed Grants: All infestation of known Spotted Knapweed controlled 1989-90-91. Tours held throughout eight counties. Awareness level of ranchers and general public enhanced. Chances for not allowing Spotted Knapweed to become established at a problem level achieved.

4. Whitetop Project 1988-89-90-91: Largest known infestation of Whitetop (approximately 220 acres) in Southeastern Montana controlled. Grant provided time and resources to determine correct control measures. Major problem limited to single ranch. Gave incentive to initiate control before problem had spread down a major drainage.

5. Little Beaver Leafy Spurge Project 1990-1991: Allowed small community with a beginning Leafy Spurge problem to organize and initiate control. Without grant at least two ranchers in the program area would not have cooperated in a total community project.

6. Tri-County Leafy Spurge Project 1990-1991: Ranchers in a three county area (Wibaux, Prairie, Fallon) organized around the largest single Leafy Spurge infestation in Southeastern Montana to contain the large infestation's present boundaries. Allowed incentive, not only to landowners, but to weed boards and for weed boards to work together on an area basis. This would not have been accomplished without a grant.

7. Hackberry and Cottonwood Leafy Spurge Projects 1991: Allowed interior area of a Leafy Spurge problem to organize, plan, and initiate biological control, and outside fringe areas to engage chemical control. Grant provided basis for entire community to organize.

8. Ridge Area Leafy Spurge Project 1991: Grant provided the beginning point for entire community to organize and plan a total control program.

In the actual examples listed above I am sure that no action, or at best action by communities, counties, or individuals at a much later date would have been the weed control results if grants from the Montana Noxious Weed Trust Fund were not available.

The educational and organizational process necessary to apply for and receive grants is positive. It allows for the promotion of integrated methods for managing noxious weeds.

I urge the Montana Department of Agriculture to continue the Montana Noxious Weed Trust Fund Grants Program as it currently exists.

Sincerely,

Ellis Williams

Ellis Williams
Fallon-Carter Extension Agent

Thank you for your comments.

Letter #6

COMMISSIONERS
Box 846 - Phone 778-2883
Ronald D. Shepherd, Chairman
Donald Rieger, Ismay
Allen Rustad, Baker

CLERK & RECORDER
Mary Lee Deitz
Box 848 - Phone 778-2883

COUNTY ATTORNEY
Denzil R. Young
Box 820 - Phone 778-2406

JUSTICE OF THE PEACE
Charles O. Larson
Box 206 - Phone 778-2883

FALLON COUNTY
BAKER, MONTANA 59313

ASSESSOR
Curtis Huether
Box 499 - Phone 778 2

CLERK OF COURT
Carol Wade
Box M - Phone 778-28

SHERIFF
Leland Gundlach
Box 899 - Phone 778 2

SUPT. OF SCHOOLS
Marlene A. Ferrel
Box 1117 - Phone 778-

TREASURER
Faye M. Koenig
Box 787 - Phone 778 2

WEEDS DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

January 7, 1992

The Fallon County Commissioners request that the Montana Noxious Weed Trust Fund remain structured as it currently exists.

This program has allowed our area of Montana to address noxious weed problems that would not be possible without this program.

Southeastern Montana characteristically has large areas, low population, and low tax bases. It is essential that these funds and programs be channeled to these areas.

Eastern Montana still has an opportunity in many cases to successfully implement noxious weed control programs. Without the Montana Noxious weed Trust Fund assistance, many of these problems could not, or would not, be addressed.

Ronald Shepherd
Chairman

Donald Rieger

Allen Rustad

Thank you for your comments.

Letter #7

FALLON COUNTY WEED BOARD

Reply to:
P. O. Box 850
Fallon County Court House
Baker, Montana 59313
778-~~2891~~
2883 Ex

WEEDS DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

January 7, 1992

The Noxious Weed Trust Fund Program has had very positive results in Fallon County. County projects and joint county projects with neighboring counties have impacted greatly total noxious weed efforts.

Without this program, a "real reason" for a community to organize around their noxious weed problem would not exist. Additionally, funds from the program have definitely eradicated noxious weed infestations in southeastern Montana.

I and the Fallon County Weed Board urge the continuance of the Montana Noxious Weed Trust Fund as it currently exists. Thank you.

Sincerely,

Robert J. Irvine, Chairman
Fallon County Weed Board

Thank you for your comments.

"Dedicated to Noxious Weed Control"

Letter #8

CARTER COUNTY WEED BOARD

P. O. BOX 315
EKALAKA, MONTANA 59324

WEEDS DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

January 7, 1992

The Carter County Weed Board in meeting assembled 1-6-92, unanimously adopted the following. "That administration of the Montana Noxious Weed Trust Fund Program remain unchanged, both in obtaining funds and distributing funds."

We further feel that the Board that makes final decisions on the disbursement of grant monies is distributed equitably throughout Montana, and this system does not need changing at this time.

Sincerely,

Jerry D Cathey

Jerry Cathey, Chairman
Carter County Weed Board

Thank you for your comments.

Letter #9

North Powell Conservation District
91 North Frontage Road - Deer Lodge, MT 59722 - Phone (406) 846-1703

January 7, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Division
Capitol Station
Helena, MT 59620-0205

The North Powell Conservation District has read the Draft Programmatic EIS - Montana Noxious Weed Trust Fund Program and we would like to see no action taken (continuation of the existing program).

The North Powell Conservation District feels the program is best handled at the local level by local people. Any change could be detrimental.

Sincerely,

David Cochran

David Cochran
Chairman, North Powell Conservation District

DC/sh

Thank you for your comments.

Letter #10

MONTANA WILDERNESS ASSOCIATION

Jan. 9,1992

Weeds DPEIS
Montana Dep't. of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

Dear Sirs:

After review of the draft PEIS on behalf of the chapter, it has been agreed that preference should be given to Alternative #2 as being more ecologically responsive in dealing with future programs and thus justifying the added cost. In any event, the program should not be discontinued.

Very truly yours,
Ed Prach
Ed Prach, Secretary

Flathead Chapter MWA • P.O. Box 543 • Kalispell, MT 59903-0543

Thank you for your comments.

Madison County Weed Control

P.O. Box 278
Virginia City, MT 59755

200

January 9, 1992

Weed DPEIS
Montana Department of Agriculture
Capitol Station
Helena, MT 59620

The Madison County Weed Board would like to submits, for the record, their position on the Draft Programmatic EIS - Montana Noxious Weed Trust Fund Program.

The Board's preferred alternative is number One, to continue the Trust Fund as it is currently administrated. The Board believes that the Trust Fund is an excellent weed management activity and no changes are necessary. Other alternatives would be steps backward in the Statewide Weed Management Program. In essence if a program isn't broke it is not in need of fixing.

The Board has several other positions and concerns. The Board agrees that details are possibly necessary regarding environmental concerns. The Board's position is: 1) The decision for what level of document, Environmental Checklist; Environmental Analysis or an Environmental Impact Statement to accompany a project request, reside with the County Weed Board. 2) That no additional paperwork requirement becomes so technical or burdensome that it restricts entities in their submission of requests.

The Board strongly believes that the county has the capability for ascertaining the level of a needed environmental document. The field level (County) personnel will have the "best" knowledge of the land resources and management impacts. The decision level can not be made by personnel who are not directly tied to the on-the-ground situation. The Board does not believe that there is any one person or group of people that have the capability to be that familiar with the land and related resources in a State as large as Montana.

This is not criticism, but reality. There is no need to enter a judgmental level into the current process that only will slow or prevent the use of an excellent noxious weed management tool - Trust Fund.

The Board knows that if the environmental decision is taken from the county, that this can only weaken the "professionalism" of the County's Weed Management Program. The goal is to continue the strengthening of the professionalism at the county field level of weed management.

To continue the professionalism goal, the Board's position is that through workshops, seminars and etc., the county personnel can be given the opportunities to become better acquainted with the Montana Environmental Protection Act (MEPA).

The objective is to meet the criteria of MEPA, then the Act must be made available to County Weed Management Personnel. These personnel are the ones who are and will continue to conduct field operations. The roles of MDA and trust council should be one of facilitator, not one of judge and jury. It has been proven many times, paper plans do not prevent incidents. Reduction comes through trained and knowledgeable personnel who are doing the job.

A Secondly, the Board does not agree that non-chemical requests are exempt from preparation of environmental documents. There are research type requests that also use herbicides, but in the EIS this is not clearly defined. The main critique is that the Trust Fund is one type of fund, but this EIS recommendation adds restrictions to one type of request and not another. It is an unnecessary recommendation and should be eliminated. All requests should be treated equal and the decisions retained by the preparers of the requests.

B Third, the Board has taken a position regarding administrative costs that meet the Act and intent of the Vehicle Fee Legislation. The Trust Fund Act, 80-7-814 (3d) states that the cost for collecting the surcharge is to not exceed 3%. Therefore, the Board's position is that administrative costs be 5% and never to exceed 6.5%.

The Board's position rests in 80-7-9-4 (4) "Preference to Weed Control Districts and Community Groups". The Board interprets the intent and other legislation that the Trust Fund was to assist on-the-ground activities and administrative costs are to be kept at the minimum. The Board stands firm that any percentage exceeding 6.5% is considered in non compliance with the intent of the Trust Fund Legislation.

C Fourth, the Board has a concern that funding of non-chemical requests are exceeding the intent of governing legislation. Data from DPEIS states the 1990 funding level as 41% for non-chemical requests.

The Vehicle Fee Act states 25% funding of non-chemical requests and the 25% was based on the intent of the 1985 Trust Fund Act. Therefore, 41% is outside the intent of governing legislation.

The Board's position supports research and education activities, but not at a level over or above the intent of legislation. The Board recommends that non-chemical requests, majority originating from the University System, be a county co-sponsored grant.

A All chemical research must comply with FIFRA regulations concerning proper experimental procedure. Funded projects must follow these regulations and MDA will verify compliance.

B The Noxious Weed Trust Fund Act allows for up to 3% of the herbicide surcharge to be used for collection of the surcharge (80-7-813 MCA). Approximately 1.5% of the surcharge is expended yearly for the surcharge collection. Three percent (3%) of the weed vehicle fee may be retained by the county treasurer for costs of collection (80-7-810 MCA). Twenty-five percent (25%) of the weed vehicle fee must be used for research and development of non-chemical weed control methods (80-7-810 MCA). All other administrative and grant appropriations are at the discretion of the legislature. There is no legislative mandate or intent setting administrative costs at a certain level. The Department is committed to keeping administrative costs as low as possible. See Chapter 3 of the EIS for a further description of the NWTF program.

C The enabling legislation of the grants program mandates that a minimum of 25% of the fee be used for research and development of non-chemical weed control methods (80-7-810 MCA). While the Department funds projects based on merit, the Act does not limit the total amount spent on non-chemical projects.

This recommendation is founded on the following concepts: 1) The co-sponsorship will develop a better working relationship and understanding between the field level administration and research activities. 2) Development of research activities that the "Ground Doers" need and want and, 3) Provide increased support and interest for research and more specifically for educational, weed prevention, detection and monitoring activities.
Fifth, the Board's concern is that the DPEIS did not address the need for a State Level Coordinated Weed Management Plan. The issue of developing improved coordinating relationships between state agencies and counties and between counties was not addressed.

The Board's position is that coordinated (state-county) goals and objectives must be developed that guide funds and energies in a coordinated effort of weed management.

The Board recognizes there are presently successful accomplishments in weed management. The Board also knows currently weed management jurisdiction barriers are being reduced and that inter county coordination is being obtained. This is exactly what is needed for successful professional weed management.

A State Level Plan should not be a "big brother" plan, but one that addresses better coordinated programs, sets forth coordinated objectives for addressing means for managing specific activities of weed management, and specific weed species and broad actions for accomplishment.

The Board believes that the vehicles for developing such a plan is available. The vehicles are MWCA, formed geographically weed groups, the trust council and State Weed Coordinator. This type of coordination is needed in lieu of every entity beating their own drum.

In summary, the Madison County Weed Board's preferred alternative is Alternative One. The Board's other positions:

1. Environmental decision based in the county.
2. MEPA workshops.
3. No segregation of requests.
4. Administrative costs not to exceed 6.5%
5. Maintaining the intent of governing legislation.
6. Co-sponsoring of non-county non-chemical grant requests.
7. State wide coordinated weed management plan.

The Board's positions were developed at the regular Board meeting of January 6, 1992.

Thank you.

Sincerely,

Neil O. Peterson

Neil O. Peterson
Weed Coordinator
Madison County

for Madison County Weed Board

NOP/ks

Letter #12

HILL COUNTY CONSERVATION DISTRICT

January 13, 1984

Everett Snortland, Director
Department of Agriculture
Agriculture/Livestock Building
Capital Station
Helena MT 59620-0201

Dear Mr. Snortland:

The Hill County Conservation District wishes to note their support of alternative one, no action (continuation of the existing program), for the Noxious Weed Trust Fund Program.

Sincerely,

Michael Wendland

Mike Wendland
Chairman of Board
Hill County Conservation District

Thank you for your comments.

Letter #13

MONTANA STATE UNIVERSITY | Extension Service

Lewis and Clark County
City County Building Room 232
316 North Park
P.O. Box 855
Helena, Montana 59624
406-447-8346

January 13, 1992

To: Weed DPEIS
Montana Department of Agriculture
Agricultural and Biological Science Division
Capitol Station
Helena, Montana 59620-0205

From: Laurence A. Hoffman
County Extension Agent

Re: DPEIS Proposal

Comments on DPEIS proposal:

1) Can the Department continue the program as it exists is my first question or must they submit a proposal? Does what is written meet the needs of an EIS? If the answer is "yes" to both questions, then I feel that it should be left as is with "minor" administrative and project applicant changes when needed.

   If no to any of the questions, can minor changes be made to leave the program in tack so we do not loose it? Opening it up to any or some of the alternatives listed will, in my mind, draw county interests that will destroy the initial intent.

2) The alternative to "discontinue" the program would be irresponsible. The program presently shows a means to have financial support for area weed management, can monitor projects and does create integrated management programs within communities. Abandonment will stymie progress and set back accomplishments in weed management across the state.

3) Existing Program Modifications, if it is the alternative selected, has some drawbacks:
   - The modifications listed will add additional work load for project developers. sponsors, WTF committee and in the administration of the program.
   - Chapter 5, page 5-1, Alternative 2

A
   1. Education and for research projects could threaten an area just as well as a community project. If chemicals or biological methods are to be used maybe a simplified version of number three (3) should be used.
   2. For non-chemical projects, why is EIS information needed for project applicants. A check off system

A See Letter 11, Response A.

should/could be used, similar to what some weed district now do for weed management planning. If environmental concerns exist on the check off sheet, then EIS should accompany the application.

4) First paragraph in section, second to last line - The word "may" is used. Should it be "must". Without it being a "must" then it leaves an opening in the process.
c. Section. In large area or multi area projects, this could cause more work and dollars then the actual project dollar needs. Some of this information will be "guesses" without actual dollars being needed to conduct surveys or tests will time of process lengthen? EIS costs, will they be inkind costs or reimbursed costs from grant?
d. Section. Will Fish, Wildlife and Parks have this resource available to give to all the project applicants putting together the DPEIS information? Will the FWP be the check off group for this part of the application before committee gets to review and approve grants? Do they have the dollars and personnel?

B Will the Weed Trust Fund committee sign off on all these area for application approval and assume liability that "all" EIS needs are met.

Page 5-2 Concerns:

Will districts, counties and agencies only participate in projects of education and research to get away from DPEIS standards and requirements and in turn reduce on the ground weed management by community action group? Cost and time of DPEIS completion will bring this portion as number one usage in a year or two.

Page 5-3, number four (4). Fourth paragraph.

What will they be and who establishes the evaluation standards that will be broad enough to meet "all" projects? Where are the dollars and person(s) to do project checks?

C Page 5-3, last paragraph - subsidizing county weed programs. The reason for dismissal is questionable. Do we have statewide cooperative weed management projects now? Education and research projects yes, but statewide management projects?

Option Alternative:

From the Weed Trust Fund's take: (1) dollars enough to establish a statewide weed management coordinator, similar to other states to coordinate highway and railroad contracts, MNWSFH programs (list goes on); and (2) Take remaining WTF dollars and give back to county or community programs with area or species significants to control spreading and establishment of noxious weeds.

B See text revision on pages 5-2 and 5-3.

C The original intent of the Noxious Weed Trust Fund was not to subsidize county weed district budgets, but to target money toward critical management areas on a statewide level. The current method of directing funds back to individuals or counties through grants helps ensure that high priority areas are targeted for management, and that revenue is being utilized efficiently. In addition, research on chemical and biological weed control, and educational programs can be targeted from a statewide perspective under the current program.

Letter #14

HC84 Box 3023
Forsyth, Mont 59
Jan 14, 1992

Weeds DPEIS.
Montana Dept of Agriculture.

Dear Sirs:

I am writing in regards the E.I.S. on the Montana Weed Trust fund program I think the program should be Continued with modifications.

It seems like there is too much time and money spent on talking about weeds and not enough on getting rid or Control of them.

We need more qualified people in the field, working on the problem areas and getting rid of the "hot" spots before they spread.

The County weed Coordinators probably need more help.

We need the program and it should go all out on Chemical Control before the weed areas enlarge so that eradication is impossible.

Yours Truly,
Tom Wimer

Thank you for your comments.

Letter #15

ROSEBUD CONSERVATION DISTRICT
FORSYTH, MONTANA 59327

January 15, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, Montana 59620-0205

RE: Comments on Draft Programmatic EIS - Montana Noxious Weed Trust Fund Grants Program

The Rosebud Conservation District Board of Supervisors unanimously agree that the Noxious Weed Trust Fund Grants Program should be continued. The loss of pasture, hayland, and cropland due to weed infestations is a travesty for Montana and we feel this program is a step in the right direction in solving the problem.

However, the board does feel that a greater percentage of the grants should go toward control methods rather than education. Education programs should be a part of the program but could be funded through the county and/or conservation district.

In closing, we urge the continuation of the Noxious Weed Trust Fund Grants Program but with emphasis on control rather than education. In any case, we do not want the program to be discontinued.

Sincerely,

Dennis E. Kenney

Dennis E. Kenney
Chairman

Thank you for your comments.

Letter #16

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
BILLINGS AREA OFFICE
316 North 26th St
BILLINGS, MONTANA 59101

IN REPLY REFER TO:
Land and Minerals
Code 360

JAN 15 1992

Everett Snortland, Director
Weeds DPEIS
Montana Department of Agriculture
Capitol Station
Helena, Montana 59620-0205

Dear Mr. Snortland:

Comments to the draft Programmatic Environmental Impact Statement (PEIS) for the Noxious Weed Trust Fund dated December 1991 are as follows:

A 1. Page 2 - 1, the second paragraph on the right column states, "The remaining Category 1 weeds--diffuse knapweed, Russian knapweed, Dalmation toadflax, and whitetop--affect much smaller acreage but are rapidly spreading." This statement may more accurately read, "The remaining . . . but have the potential for rapid spread."

B 2. Page 2 - 17, the portion regarding the U.S. Bureau of Indian Affairs needs several corrections. The word "tribal" written once in each paragraph should be replaced by "trust." Also, the last sentence can be changed based upon a review of the 1991 Noxious Weed Control Program to read, "In 1991, the agency spent $578,700 to treat approximately 23,000 acres."

3. The current Noxious Weed Trust Fund Program has been quite successful in accomplishing weed control throughout the State of Montana. Some of the benefits received have been (1) acres of noxious weeds managed, controlled, or eradicated; (2) cooperative efforts developed between landowners, landusers, and county, State, and Federal agencies; and (3) many individuals throughout the State educated or made aware of the existing weed problems, concerns about herbicides, the proper use of herbicides, and environmental concerns related to humans, wildlife, water, and land resources. These positive benefits of the present program could be mentioned in the PEIS.

A Page 2-1 has been changed in response to your comment.

B The BIA section of Chapter 2 has been modified to incorporate the revised figures in your comment.

The participants (Department of Agriculture staff and Noxious Weed Advisory Council) in the approval process for use of grant funds have much to do with the success of the present program. Council members need to properly evaluate all proposals, even those from their own area of the State, when "weeding out" poorly planned or poorly administered grants.

However, it is agreed that monitoring and/or pre-evaluation of a larger percentage of the approved projects would guarantee a program with greater successful projects and less negative publicity.

C 4. Alternative No. 2 requires more environmental information in greater detail, possibly to the detriment of the program. Some projects would not be proposed due to the inability of the "organizer" to gather all the needed information. Furthermore, who would make the decision on whether an environmental assessment, environmental impact statement, or environmental checklist will be required?

Evaluation of all projects annually would be acceptable, but in lieu of several additional projects being funded. Alternative No. 2 appears too heavy towards documentation, possibly at the expense of some good weed control projects not being initiated, proposed, or funded.

Sincerely,

Area Director

C If an EA or EIS document is required for a requested grant, it will be the responsibility of the Montana Department of Agriculture to prepare or contract for the needed document. It will be paid for by the Montana Department of Agriculture.

Letter #17

Deer Lodge Valley Conservation District
91 North Frontage Road - Deer Lodge, Montana 59722 - Phone (406) 846-1703

December 16, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Division
Capitol Station
Helena, MT 59620-0205

The Deer Lodge Valley Conservation District has read the Draft Programmatic EIS - Montana Noxious Weed Trust Fund Program and we would like to see no action taken (continuation of the existing program).

The Deer Lodge Valley Conservation District feels the program would best be handled by local people in the local districts.

Thank you for your comments.

Letter #18

Broadwater County Weed District

Broadwater County Courthouse
P. O. Box 1336 - Townsend, MT 59644-1336 - 406-266-5591

January 17,1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Division
Capitol Station
Helena, Montana 59620-0205

To Whom it May Concern:

The Broadwater County Weed Board , after reviewing the Draft Programmatic EIS, is in favor of retaining alternative number one of the proposed EIS.

The more money spent at the administrative level, the less there is available for the actual control of noxious weeds in Montana.

We would not be adverse to a revision of the Environmental Action Checklist, asking for more detailed information if deemed necessary.

Sincerely,

Ann Rauser

Ann Rauser
Supervisor

Thank you for your comments.

Letter #19

January 17, 1992
Big Timber, MT

Dear Everett Snortland:
Barbra Mullin:

Since being involved in one of the earlier grants of the NWTF I would like to make the following comments:

1. A state law in Montana mandates noxious weed management.

2. The legislature has co-operated to provide funding for projects that go a long way in demonstrating methods of carrying out this management. The funding comes from sources that neither bring review or argument every day the state budget is reviewed.

3. The grant taught our group:

   a. Weed identification which leads to early treatment of spotty infestations instead of vast acreages.

   b. Pesticide licensing of many ranchers for the first time.

   c. Noxious weed awareness spread over the entire county.

   d. Alternative methods are available for weed control.

4. The PEIS appears to be an excellent publication. I think that between this statement (PEIS), the labeling process and the licensing of applicators the MDA should not feel liability vunerable enough to have to change the approach or water down the potential of the NWTF.

5. I favor the 'no action' alternative for the NWTF to follow. I do not favor a more complicated application for grants. It would only require a professional grants writer and take money away from the project's intent.

Enclosed please find an interesting report by a national columnist who points out possible undue criticism to agriculture.

Yours truly,

Lloyd Berg
Springdale Knapweed District

Thank you for your comments.

Billings Gazette 1-6-92

Numbing numbers can be misleading

National columnist

George Will

To the untrained eye, it was just another of the numbing numbers by which journalism calls attention to this or that crisis: "Every year, the World Health Organization estimates, 220,000 people die from pesticide poisoning." To the trained eye of Richard McGuire, New York's Commissioner of Agriculture and Markets, that assertion in an upstate New York newspaper's editorial looked implausible.

It was. Follow McGuire as he follows the slithering number to a lesson about the strange life led by some statistics and the terrible data on which government often makes decisions.

A call from McGuire's office to the upstate editor revealed that he had received the editorial from a California syndicate. A call there revealed that the 220,000 number was from information supporting Sen. Patrick Leahy's (D-Vt.) bill to prohibit U.S. companies from exporting pesticides whose use is banned in America. Leahy was concerned about America importing foods containing residues of chemicals banned here.

Leahy's office directed McGuire to the WHO, which directed him to a WHO report. McGuire wrote to the author in Switzerland, who wrote back to say the figure of 220,000 deaths came from another WHO publication.

The author had warned readers that "reliable data on pesticide poisonings are not available and the figures given are derived from various estimates." Unfortunately, he said, quoted figures often acquire misplaced momentum because they are shorn of their tentativeness.

Here is what the WHO publication the author relied on actually said: "Of the more than 220,000 intentional or unintentional deaths from acute (pesticide) poisoning, suicides account for approximately 91 percent, occupational exposure for 6 percent and other causes, including food contamination, for 3 percent." Of the 3 percent (itself a guess), we are left to guess what portion involved food contamination.

WHO's basic message was that there were actually 20,000 deaths from unintentional pesticide poisoning in a world population of five billion. The numbers floated downstream, from the WHO to the senator's office to the editorial writer's office where this was written:

"Every year, the World Health Organization estimates, 220,000 people die from pesticide poisoning; 25 million fall victim to injury or illness. There are no reliable numbers on how many of these casualties result from exposure to unlicensed chemicals imported from this country ... But there is no question that the American manufacturers who continue to traffic in these poisons are a significant part of the problem."

That is, American traffickers in poisons are unquestionably a significant part of the problem, if there is a significant problem. (U.S. Food and Drug Administration tests on imported foods reveal no significant problem with chemical residues.

The use of nutty numbers to advance political agendas may result from cynicism or from confusions born of carelessness. The result can be foolish public policies.

Twenty years ago The Public Interest published "The Vitality of Mythical Numbers," by Max Singer, then president of the Hudson Institute. He dissected a then commonly cited number, that New York City's "100,000-plus" heroin addicts were stealing upwards of $5 billion a year.

The assumptions behind the numbers were: 100,000 addicts were each spending an average of $30 a day on their habits, or $1.1 billion a year (100,000 x 365 x $30). Stolen property is fenced for about one-quarter of its value, so addicts must steal upwards of $5 billion worth.

Singer was skeptical.

Most stealing by addicts then was by shoplifting and burglary. All retail sales in the city then totaled $15 billion (including cars, carpets, diamonds and other goods not susceptible to shoplifting). All losses from all forms of theft and embezzlement were about 2 percent. Even if shoplifters accounted for half of that (they don't; employees steal much more), and if all shoplifters were addicts (they aren't), the addicts' shoplifting total would be $150 million.

Burglary? Even if one-fifth of the city's 2.5 million bouseholds had been burglarized each year (they weren't), and accepting the police estimate that the average loss from a burglary was property worth $200, the burglary total ($200 x 500,000) was $100 million.

So even with inflating assumptions, the burglary and shoplifting sum was a quarter of a billion dollars worth of property. That is not chopped liver but it not $5 billion.

Probably the "100,000-plus" number of addicts was inflated. A pertinent question about such numbers is: Whose interests are served by a numerical exaggeration? The answer often is: The people whose funding or political importance varies directly with the "severity" of a particular problem.

Here, then, is a helpful number: two. When an advocacy group cites hair-raising numbers about the problem for which they are advocating solutions, or a bureaucracy cites such numbers about the problem its programs address (homelessness, drug abuse, teen-age prostitution, whatever), divide the numbers by two.

Similarly, when the Office of Management and Budget issues deficit projections, multiply by three.

Letter #20

Memorandum

Date: Jan. 19. 1991

To: Mr. Everett M. Snortland, Dir.
Montana Department of Agriculture
Capitol Station
Helina, Montana 59601-0201

From: Lower Pondera Weed Committee
% Ernest H. Stordahl Chr.
Ster Route Box 32
Conrad, Montana 59425

Subject: Draft Programmatic EIS - Montana Noxious Weed
Trust Fund Program.

Dear Mr. Snortland and Weeds EIS Committee

The Montana Noxious Weed Trust Fund money's have been of great help to land owners of the Lower Pondera weed projects for the past three years. Also before this committee was started the Marias River weed project. With this grant money it has made the noxious weeds decline a great amount rather then a rapide increase. Which is the case in other areas. Here is some thought on the NWTF program.

1. It has worked well with us on cost share of Chemicals and the use of some biological control methods.

2. We don't think the fund money needs to go to fund any more large weed research programs. Rather to more land owner projects to give some insentive so that a greater and clective work to get the small area of noxious weed stamped out. Land owners we are Environmentalests wanting our land to be the most perductive for our use and the one to use it after we are gone.

3. Eduction needs to be done with some funding though the Extention Service I think and along with the county weed district now in place. Our group has grown to be more aware of Noxious Weeds and by visting at our meetings find out what works in control efforts and what has not worked.

4. We would like to see continuation of the existing Noxious weed trust fund as is, or maybe with only some minor ajustments to make it easier to administrate.

Thankyou,
Ernest H. Stordahl

Thank you for your comments.

Letter #21

Everett Snortland
Montana Dept. of Agriculture
Agriculture/Livestock Building
Capitol Station
Helena, MT 59620-0201

January 20, 1992

Dear Everett:

I have a few comments on the draft Noxious Weed Trust Fund Programmatic EIS. In general, the EIS seems to describe the existing program adequately. There are a few potentially misleading items that I would like to see clarified.

A 1. The graphs on page 3-5 and 3-6 are entirely misleading. While integrated pest management programs account for most of the on the ground proposals reviewed by the Trust Fund, they are composed primarily of spray programs. In almost every proposal (and I do read every one), the vast majority of the acreage proposed for treatment is sprayed. Livestock and insects are used primarily in locations where, due to proximity to water or other sensitive sites, chemicals cannot be used. Even in areas such as the southwest project area, where seedhead flies are widely distributed in knapweed, spraying is still the primary control method because the flies alone do not achieve a level of control satisfactory to the residents. I strongly feel these graphs should be reworked to accurately portray the extent of chemical use in the funded proposals.

2. The EIS does not state which is the preferred alternative. While off the record the state realizes that they need to change some aspects of the program to meet MEPA requirements, the state does not say which of the proposed alternatives best meets the MEPA requirements.

B 3. On page 3-4, calculations show that the annual expenditure for chemicals for noxious weeds by the Trust Fund is less than 5 percent of the total spent on chemicals in the state for noxious weed control. In the discussion of impacts in section 6, effects on human health are briefly mentioned, but no attempt is made to quantify the risk, even for those handling the chemicals.

C Additionally, the cumulative effects of spraying the massive amounts of chemicals funded in part by the Trust Fund is not evaluated in terms of the larger picture of statewide noxious weed spraying. While the Trust Fund only funds a portion of the spray projects presented as grant proposals, they enable and encourage a much larger spray program to continue by agreeing to fund a portion of the chemical cost of these programs. Cost sharing on chemicals is the primary funding vehicle for proposals involving a spray program.

While the Trust Fund was initially established to do just what it is doing, the amount of funding was small enough to be passed off as a minimal impact. With the increase in Trust Fund money, the impact is much greater, and should be considered as a vehicle which promotes much of the rest of the chemical control of noxious weeds in the state, and the cumulative effects assessed.

A Integrated weed management (IWM) is defined as a management system that uses all suitable management tools to reduce weed populations to levels below those causing acceptable economic or ecological consequences. While herbicides often are the primary control method in many of the projects areas, projects fulfill the definition of an IWM project by incorporating as many tools as available into the project, including introduction of biological control agents; establishment of insectary sites; revegetation; and other cultural and physical methods. MDA will continue to encourage implementation of alternative control methods under an IWM approach.

B Worker exposure to herbicides is addressed in labeling and worker safety programs which provide information regarding the Personal Protection Equipment needed for workers using herbicides. Labeling provides for occupational control procedures for each herbicide product. In addition, labels provide descriptions regarding the use of individual herbicides, disposal of unused portions, and restrictions on applications.

C Major noxious weed control programs administered by federal land management agencies have assessed cumulative impacts relating to other weed control programs in EISs and have concluded that the cumulative effects pose acceptably small risks to human health and the environment. Similarly, the NWTF program, representing a small portion of the statewide program assessed in those federal EISs, does not change the cumulative effects assessment.

In addition, cumulative impacts from various programs would not be expected if restrictions on labels are followed. See additional text on pages 6-17 and 6-18.

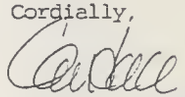
D 4. On page 6-9, reference is made to the active ingredients in relation of sensitive wildlife species. While awareness of active ingredients is important, the larger issue of supposedly inert ingredients is possibly more important in that these ingredients are unknown. Research indicates that some of the inert ingredients are in fact much more toxic to some wildlife species than the active ingredients in a formulation. Yet there is no way to determine which inert ingredients are in a particular formulation because this information does not appear on the label, and the restrictions on the label apply only to the active ingredients. What kind of liability does that open up for the state?

An additional point to consider. It might be in the states best interest to fund the mapping of sensitive soils and groundwater locations on the level of detail of a soil survey map. There are areas that would be subject to debate, and these would have to be evaluated on a case by case basis. However, due to the financial constraints of the counties, it would facilitate the compilation of grant proposals. It would also provide a base map from which the rest of the weed control efforts in the state could be planned. Areas where there were questions about sensitivity could be evaluated in concert with the additional staff person proposed by the state to work in the Trust Fund program.

I realize that the initial mapping effort would be an expensive item, but it is something for which Trust Fund money could be allocated. There may also be a way to roll this project into other proposed or ongoing work. If the counties do not consider soil hazard ratings in their determination of spray locations and the Trust Fund finances a portion of the program, the state has some liability there.

Thank you for your consideration of this information.

Cordially,



Candace H. Durran

D The U.S. Environmental Protection Agency (EPA), in 1987, developed a policy on toxic inert ingredients in pesticide products (Federal Register, Volume 52, page 13305). Through this policy, EPA encourages the use of least toxic inert ingredients and requires development of data necessary to determine conditions of safe use of products that contain toxic inert ingredients. Subsequent to this policy, EPA has revised and modified previously published lists of inert ingredients in pesticide products that are of toxicological concern and require priority testing (Federal Register, Volume 54, page 48314). EPA also is addressing the period of time allowed to exhaust stocks of old formulations. As part of the EPA reregistration process all inert ingredients will be reviewed by 1997.

Letter #22

NOXIOUS WEED CONTROL BOARD
BUTTE, SILVER BOW
BUTTE, MONTANA 59701

Jan. 20, 1992

TO: Montana Department of Agriculture

FROM: Butte-Silver Bow Weed Board

SUBJECT: Comments on Draft PEIS, Noxious Weed Trust Fund

The document was reviewed by Weed Board members, the Weed Supervisor, and Extension Agent. We offer the following comments:

QUALITY OF DOCUMENT CONTENT

We are disappointed by the obvious lack of expertise in weed management and weed science demonstrated by Chen-Northern. There is an obvious bias against chemicals which has resulted in a lack of objectivity in dealing with impacts and an unwillingness to consider possible alternatives. The document is less than objective in suggesting what is necessary to continue what has been a very sucessful program using current procedures. As an example, consider the statement on indirect impacts for Alternative 1 on Page 6-12. "Hand pulling of weeds can expose workers to hazards such as poisonous snakes..." Are they pulling our leg? Why not mention the positive economic impacts created by the sale of gloves? Attached is a list of specific errors, etc. referenced by page.

The document contains a gallon of reference data, a pint of improbable impacts and minutae, and a teaspoon of objective analysis. We suggest the only reasonable way to correct the quality problems with this document is to have some review and revision done by people competent in the subject matter being addressed.

DISCUSSION OF IMPACTS

The discussion in Chapter 6 is overloaded with a listing of impacts that are possible, but in reality seldom occur in any significant way. The section continually refers to "has the potential to", " may enter", "may reach", "could potentially impact", "could be affected", etc. That's all well and good, but what are the documented impacts of weed management in terms of frequency and severity? You can fill pages with improbable, insignificant "worst case scenarios". It adds nothing to determining a future course of action, and gives the anti-chemical, anti-weed control interests a lot of quotable material.

While bashing chemical methods, there is a lack of objectivity in addressing impacts of other elements of the program. An example is education. It is our experience that when people are educated about the weed problem and weed management programs, a large percentage of these people then use chemical methods to address their weed problems. Thus you could attribute all of the impacts associated with chemical methods in the document to educational programs as well.

MONITORING

We agree that the current level of monitoring places a high degree of responsibility on the projects sponsors to conduct their work properly with minimal environmental impacts. So far this approach has worked well, as documented in many places in the document. While we would favor a minimal increase in monitoring, we are totally opposed to increasing MDA staff to do this work. We suggest using private contractors and Extension Agents on a trial program to do monitoring. We suggest a bi-level program where all projects get a minimal level of review. This review would indicate those projects which would require a more in depth investigation. With the number of projects funded annually, it is unreasonable to expect that any great amount of monitoring can take place on all of them. Indeed, past experience shows that a major increase in monitoring is unnecessary.

THE APPLICATION PROCESS

We are appalled at the idea that a major increase in data be required for each project application under the assumption that this will lessen environmental impacts. No matter how much material is submitted, the conduct of the project is what will determine the extent of environmental impacts. If people explain what methods they are going to use, and then use materials such as chemicals as specified by label instructions, environmental impacts are not going to be a problem. To require all this additional data of landowner groups will force them to hire consultants (like Chen-Northern?) to compile the information. While the typical landowner can be educated in and practice proper weed management techniques, few have the background and time to prepare what is proposed in Alternative 2. What is ironic is that the current level of data being submitted is proving adequate, as evidenced by the overall effectiveness of the work and the lack of environmental problems.

CONSIDERATION OF OTHER ALTERNATIVES

The superficial dismissal of directing some money to the county level to accomplish statewide objectives (Page 5-3) demonstrates a lack of understanding and objectivity, and unwillingness to innovate which is not unexpected given the nature of the preparer. However, we expect better of the Advisory Council and the Department.

A There are many possibilities for funding county programs directly so that effective, efficient weed management is accomplished. After all, much of what we accomplish on a statewide basis is the cumulative result of many local actions. The key here is to design a program that places conditions on county weed programs so that you can be confident that money given will be used properly. We challenge the Advisory Council and the Montana Weed Control Association to develop a program that will do exactly that, and have it enacted by the 1993 Montana Legislature.

Just one example relates to the weed supervisor position. We feel it is critical that all counties or groups of counties employ a qualified, full time weed supervisor who can implement a integrated, comprehensive weed management program. The weed supervisor must be directed by a competent, active Weed Board. A program could be developed that would use some of the Trust Fund to reach this objective. In the future we envision that a portion of the Trust Fund will be distributed by the Advisory Council as it does now, and a portion will go directly to areas who develop programs that meet standards set by the Advisory Council and the Department.

USE OF NWTF MONEY FOR OTHER THAN PROJECT ACCOMPLISHMENTS

Using the authors math, administrative costs would increase from $80,000 to $140,000. This would amount to 2 or 3 extra positions. Yet Alternative 2 proposes that they wade through dozens of pages of data for hundreds of projects being submitted for funding (refer to Pages 5-1, 5-2), and then visit over one hundred projects during a short field season to monitor performance. This is not possible. What will happen if Alternative 2 is adopted as written is that administrative costs will continue to rise until they exceed 20% of the funds available. The camel's nose never stops pushing into the tent!! The entire program is too small to be impacted by these kinds of costs and remain effective.

SUMMARY

We recommend you not adopt Alternative 2. Modifications of Alternative 1 along the lines suggested above will do the job. We also urge that you pursue new approaches for effective use of Trust Fund money. If you emphasize well planned projects by competent, responsible people, and minimize bureaucracy and paperwork, you will serve the environment and economy of Montana well. Thank you for the opportunity to comment.

Sincerely,

Dave Pickett, Chairman
Butte-SilverBow Weed Board

A See Letter 13, Response C.

SPECIFIC COMMENTS ON DRAFT PEIS - BUTTE- SILVER BOW

B

Page 2-7
Paragraph 1

1. Have 2,4-D Ester formulations even been used in projects funded by Trust Fund? Why?

MDA

2. How about ally? Specimen label is included.

C

Page 6-2
Paragraph 2

3. "There have been no documented adverse indirect environmental impacts associated with various weed control methods used under the existing NWTF program. However, continuation of the program as it is presently being administered increased the potential for impacts to occur."

[redacted] If first sentence is true, why is program being changed? Who said second sentence is true?)

D

Page 6-9
Paragraph 1

Wildlife
"Big game species which eat broadleaf plants and shrubs (eg., pronghorn, mule deer, and white-tailed deer) as a large portion of their diets could experience a reduction in preferred foods on lands where these species are eliminated or their density reduced by herbicide applications."

Page 6-2
Paragraph 3

[redacted] Lacey (C. A. et al. 1989) refutes this.

E

Also, knapweed tends to become a mono culture over time. How can Tordon reduce broadleaf plants and forbs which knapweed has already removed?

Cultural Resources

Page 6-11
Paragraph 2 & 3

Reference to sub-surface contacts.

Page 6-12

Other Treatment Methods

Paragraph 6

Reference to smoke, skin irritants, poisonous snakes, etc.
[redacted] - Waste of Trust Fund money and trees.

Direct Impacts

Page 6-13
Paragraph 6

[redacted] These pages list proposed funding increase of 4 1/2% or $57,272.00 to finance additional listed services. I personally thought that listed services can be done with $57,000.00.

B Several grant proposals have been funded that target whitetop. The most effective herbicides for use on this weed are often low volatile 2,4-D-ester formulations and Ally. It is Department policy to allow use of the most efficacious herbicides for the target weed as long as all label directions are followed and environmental concerns are addressed.

C Revenue for the NWTF grants program increased from $246,703 in FY86 to $1.2 million in FY90 due to additional monies generated from the vehicle tax and Oil Overcharge fund (see Appendix D, DPEIS). Because of the large increase in revenue and subsequent increase in number of grant projects, it is not possible for the Department to adequately evaluate each project under the current administrative level. Lack of adequate project evaluation increases the potential for impacts from the grant program to occur.

D See text revisions on page 6-9.

E Please refer to pages 6-2 and 6-9 in the text.

Page 6-15 Human Health

Paragraph 4 Reference to "improved awareness of proper weed management, and minimization of human health risks." This is conjecture.

F Page 6-17 Cumulative Impacts

Paragraph 4 "Cumulative impacts resulting from herbicides and other weed management methods applied through NWTF cooperative weed management projects are negligible."

[redacted] If true, why fixing?

F See Response C above.

G Page 2-9 BIOLOGICAL WEED MANAGEMENT

The section on biological weed management fails to discuss the relative scarcity of available biological agents to use in operational weed management. This means that unless containment of existing infestations is not done using other means, by the time biological control can be effective we will have a much more serious problem and have suffered sizeable additional economic losses. It should also be stated that when dealing with initial infestations of new weeds in Montana, only chemical or mechanical methods will be effective.

PAGE 2-18 PRIVATE ORGANIZATIONS

It should be mentioned that the willingness to use biological agents far exceeds the available supply of agents, thus forcing landowners to use chemical and mechanical methods.

G See additional text added on page 2-11.

H PAGE 5-3 INTEGRATED MANAGEMENT PROGRAMS

Refers to expecting a level of training commensurate with current EPA training and certification standards. What are these and how do they differ from what is now required for state applicators licenses?

H Montana adopted EPA pesticide applicator certification standards under the Montana Pesticides Act and these have been in place for many years. These standards are required for pesticide applicators under the grants program. This is not a change from what is currently required.

Letter #23

MONTANA STATE UNIVERSITY
1893•CENTENNIAL•1993

Department of Plant and Soil Science
Montana State University
Bozeman, MT 59717-0312
Telephone 406-994-4601
Telefax 406-994-3933

December 20, 1991

Mr. Everett Snortland, Director
Weeds DPEIS
MT Department of Agriculture
Agricultural and Biological Sciences Div.
Capitol Station
Helena, MT 59620

Dear Mr. Snortland:

I have reviewed the DPEIS on the MT Noxious Weed Trust Fund grants program and I have a few comments and suggestions.

Overall, the document appears to be well written and comprehensive. For most areas, however, the literature cited is too brief and limited to only one reference for each subject. A more thorough search of the literature will yield a vast number of relevant research papers that should be used to directly support statements of fact.

A Chapter 6 is the heart of this document. However, as it stands now, I find Chapter 6 to be quite limited in its treatment of the direct, indirect, and cumulative impacts of the NWTF grants program on the state of Montana. These issues are the most important and potentially the most controversial areas touched on by the DPEIS. As such, each area should be much more thoroughly discussed and all statements supported by published research. Most statements appear to be biased towards discounting or dismissing the potential negative environmental impacts of herbicides, a bias which must not be put forth. While it is generally true that herbicides have had very little overall environmental impact in Montana, the DPEIS must present a balanced, unbiased accounting of the scientific evidence to date. By using such an approach, the true level of risk associated with this program (very small) will become obvious. The section discussing potential impacts on socioeconomic and human health considerations seems particularly brief. There is a wealth of scientific information available to further support and expand on the few statements made in this section.

The DPEIS would make a stronger impact if it endorsed one particular alternative for the future of the NWTF grants program. My choice would be Alternative 1--No Action. I think this alternative is easily defensible and will be supported by most rational people.

I hope these comments and suggestions will be of use.

Sincerely,

William E. Dyer
Asst. Professor, Weed Physiology/Molecular Biology

A A programmatic environmental impact statement addresses impacts which are directly affected by administration of the program. Direct impacts of the NWTF program are limited to the economic affects the program is having on noxious weed control and any liability the state of Montana may have as it relates to administration of the NWTF program. Alternatives developed to mitigate impacts in a programmatic EIS are administrative ; in other words, alternative ways to manage the program to minimize identified impacts of the program.

The purpose of the programmatic EIS is not to provide a complete evaluation of the impacts of weed control methods presently employed. Its purpose is to evaluate the environmental impacts (if any) of the NWTF program.

Letter #24

DowElanco
1001 S. 24th St. W
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Billings, MT 59102
Phone: (406) 652-4977
FAX: (406) 656-2427

January 20, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

DowElanco

This letter is to comment on the Draft Programmatic Environmental Impact Statement on the Montana Noxious Weed Trust Fund grants program. The draft EIS contains important information and offers an excellent opportunity to review what the Montana Trust Fund has accomplished since 1985. DowElanco has the following general comments:

1. DowElanco supports upgrading the NWTF program to comply with MEPA Act Title 75-1-101.

2. The PEIS does not adequately document the positive environmental impact on an acre when the weed is controlled. i.e. the economics of forage increase and reduction of soil erosion. This type of information helps reduce liability.

3. The PEIS does not establish the relative risk of a negative environmental impact by the use of herbicides? For example, a project that is controlling spotted knapweed (low rates) versus a leafy spurge (higher rates) project? This information will put liability in perspective.

4. The NWTF should have a plan each year to evaluate and document progress in a state wide weed control effort. A year end report would provide the following:

   a. Acres within the management zone, acres treated, effectiveness of the control method (i.e. percent control), application method, cost/acre, estimated forage increase/acre, type and number of biological agents released, and acres treated with biological control methods.

   b. Strict accountability of all monies used from the trust fund via grants or administration costs.

This documentation should be made public to assure appropriate allocation and gain continued state support and participation.

5. Preferred alternative: DowElanco supports an alternative between 1 and 2. Since the program has been operating without adverse effects to date, a revision of the current environmental checklist to meet MEPA requirements should be adequate in most cases. Evaluation of projects could be done in cooperation with the local county extension service, weed supervisor, or SCS personnel. In cases where this is not feasible or further documentation is required, the job could be contracted to a private consultant or to summer interns.

The following reviews the draft by section:

Perception of NWTF: Chapter 1, page 2

A * What will be done with results of the initial scoping survey? Since 72% of respondents approved of current funding allocation, 75% did not favor allocating additional monies to administer the NWTF, and 69% believed the environmental information required is adequate to ensure protection of area resources, what is the justification for choosing a preferred alternative other than number 1?

B * In the discussion on the results of the survey, widespread public perception that herbicides are harmful to human health and the environment is attributed to insufficient education. On what basis was the perception labeled "widespread"? (i.e. how many people responded to the questionnaire and how many mentioned this?) Was this survey adequate with respect to design and sample number to make such an observation?

C Chapter 2, page 5-10:

Since one of concerns was effectiveness of weed control programs, this should be included in the "Weed Management Techniques" section. What are the results when using each method? This could be added to Table 2-2 for chemical control and Table 2-3 for Biological. A standard of percent control could be utilized and comments on the duration of control.

D Chapter 3, page 4:

* Based on my knowledge of overall herbicide sales in Montana, the estimate that 32% of the herbicides purchased are for noxious weed control is extremely high and should be recalculated. Therefore, Table 3-2 is not correct or relevant. Herbicides have played an important role in integrated weed management programs funded by the NWTF by enabling cooperative groups to effectively manage weeds, protect uninfested areas, and improve forage production and wildlife habitat. The amount of herbicides used for noxious weed control, however, is very low compared to cropland weed control efforts.

E Chapter 3, page 8 and 9:

Cooperative group projects: It is stated that 188 on-the-ground cooperative weed management projects contained 280,000 acres of knapweed and 72,166 acres of leafy spurge that were controlled. What percent of the acres had herbicides applied by a custom applicator versus by the rancher themselves? This would help in targeting educational efforts.

A Scoping statements were solicited as part of the overall scoping process for the PEIS. MDA did not identify a preferred alternative as part of the Draft PEIS and the comments solicited as part of the scoping exercise were considered as part of the decision making process by MDA. See text changes on page 1-2.

B Sixty-five percent of the respondents (21 of 32 respondents) indicated that they receive several comments each year from people concerned with the environmental and human health aspects of herbicide use for control of noxious weeds. Nineteen of these twenty-one respondents indicated that education of the public or lack of knowledge was the issue relating to these concerns. The survey was targeted to obtain responses from County Weed Board Supervisors and does not represent a statistically valid measure of weed board supervisor comments or the general public.

The term "widespread" has been removed from the paragraph.

C The effectiveness of a management technique on target species is one of the most important factors to consider in a weed management program (see pages 2-5 and 2-6). However, noxious weed control with any method will vary based on soil type, environmental conditions, plant growth stage that the treatment is applied, application rate, length of time evaluations are made following application, and current land management practices. For example leafy spurge control with Tordon at 2 quarts can range from 80 to 100 percent 1 year following treatment. Likewise, control of musk thistle with Rhinocyllus conicus has varied from 30 to 100 percent depending upon land management practices, environmental conditions, and site characteristics.

The objective of the PEIS was to briefly discuss various control methods that are currently being used on noxious weeds. A detailed explanation of percent control achieved by each herbicide (and herbicide rate), mechanical method, and biological control agent used in weed management programs is beyond the scope of the document.

D See text revisions on page 3-4.

E It is beyond the scope of current recordkeeping requirements to collect this information. It could be incorporated as part of the project area evaluations.

F Summary: More verbal discussion on Figure 3-3 is needed. What does this mean from an economic standpoint? (i.e. What was the forage increase and what does this mean in cattle numbers?). In essence, what have the projects funded by the NWTF contributed back to the state of Montana?

Biological Control:

G * Are there certain agents that will fulfill the objective of density reduction and long term stabilization sooner and which are they?
* Is there an overall plan to prioritize the money on the most likely candidates for practical use in the future?

Educational Programs: Chaoter 3, page 10:

H In Chapter 1, the misconceptions of the public on noxious weeds and herbicides was attributed to lack of educational programs. It is stated in this section that the educational programs have had a positive effect on the public awareness and opinions. Is the statement in Chapter 1 intended to be a current statement? If so, in what areas are these misconceptions prevalent? If opinions have been changed within the cooperative groups funded by NWTF monies, this should be stated. Is the public perception evaluated before a project is started and after completed?

Economic Conditions: Chapter 4, page 14:

I In the last paragraph, economic benefits of controlling noxious weeds are mentioned. This is an opportunity to strengthen this with dollar figures as mentioned earlier.

Social Life: Chapter 4, page 15

J The first sentence, last paragraph, first column is not clear. This paragraph should be changed to the following: Many urban residents are less familiar with the identification, environmental impact, and effective herbicide control of noxious weeds than their urban counterparts. Because of this lack of knowledge, some residents are opposed to the use of herbicides for weed control due to perceptions of threats to human health or the environment.

Chapter 5, page 2:

K What will be included on the Environmental Checklist, Environmental Assessment, and the Environmental Impact Statement for each of the control programs? Who decides which type of assessment will be required and how will this decision be made? Can local resources such as SCS, County Extension, and Weed district personnel assist the MDA with this assessment?

F Based on research conducted in Montana, grass production would increase an average of 500 percent on sites treated for spotted knapweed. Assuming that the number of acres needed to support one animal unit for one month (AUM) decreased from 10 acres to 4 acres per AUM following treatment, then there would be a net gain of 1470 AUM's within the three county project area. However, since many treated acres involve subdivisions, recreational areas, and rights-of-ways, there are no documented increases in cattle numbers as a result of the control efforts. The contribution of these knapweed management programs to the state of Montana is in protecting uninfested range and pasture lands thus maintaining their productive capability.

G Biological control agents approved for release in the United States have cleared certain requirements through the Technical Advisory Group for Biological Control of Weeds (TAG). TAG is a federal advisory panel consisting of representatives from various federal agencies that functions under the Plant Protection and Quarantine (PPQ), Animal and Plant Health Inspection Service (APHIS). It reviews research proposals on biological control of weeds; provides guidelines to researchers that must be met prior to entry of an organism into the United States; reviews documentation for release of organisms into the United States; and recommends actions to PPQ to release or not to release biological agents from quarantine.

Ultimate success can only be determined when the insects have been released and have gone through several seasons to determine establishment. Additional time is required to research the actual efficacy of the agent in a variety of environmental conditions. To date there has been no attempt to prioritize funding because screening of most biological control agents is in the initial stages of development.

H The statement that educational programs are having a positive effect on public awareness and opinion regarding noxious weed control was provided by the supervisors of cooperative group projects (NWTF grant recipients) as part of their final reports filed with MDA. Statements made in Chapter 1 regarding the lack of education in terms of public response to noxious weed control was provided by the survey of County Weed Board Supervisors in their dealing with the public. Specific scoping surveys which identify what the public perception of weed control is before a weed control project is initiated have not been conducted.

I Please refer to additional text added to page 4-14 and 4-15.

J The last paragraph under Social Life has been modified.

K Please refer to additional text added to pages 5-2 and 5-3.

L

Chapter 5, page 3:

Fourth paragraph - field evaluation: This is an important aspect for inclusion in an overall plan. How will the success or failure of weed control be measured? I would suggest percent top growth control or a similar standard that could be easily estimated by most people. The environmental effects resulting from the project should also include estimated grass cover increase and species diversity observations.

M

Indirect Impacts: Chapter 6, page 2

Second paragraph: What is the justification that continuation of the program as it is presently being administered increases the potential for impacts to occur?

N

Soils: Page 6-3

Paragraph 1: Is loading relevant to the herbicide use for noxious weed control in Montana? If not, the discussion of such is not needed.
Paragraph 3: Persistence and movement of picloram is also dependent on application rate.

O

Surface Water: Chapter 6, page 5

Information on the fate of herbicides in surface water is available and should be included in this section.

P

Groundwater: Chapter 6, page 7

Figure 6-1 is not adequately labeled with a title or with descriptions of components. It is extremely misleading in that it illustrates that any herbicide applied will ultimately reach the aquifer, which is not the case and dependent on many factors. Therefore, this figure should be revised or removed.

Q

Socioeconomic/Economic Impacts: Chapter 6, page 11

Again, another section to add the economics of treating noxious weeds and gaining forage.

R

Human health: Chapter 6, page 12

The last sentence in the first column is discussing NOEL'S for workers. "Acceptable daily intake" (ADI) is not relevant in this sentence since this number relates to intake of a chemical in the form of residue in a crop.

L MDA will improve the evaluation process to comply with MEPA.

M See Letter 22, Response C.

N See text changes on page 6-3.

O See additional text added to page 6-6.

P See revised Figure 6-1.

Q Information that was added in Chapter 2 Page 5 and Chapter 4 Page 14 and 15 should adequately address the economics of controlling noxious weeds in Montana.

R Reference to ADI has been removed from text.

S

Alternative 2: Chapter 6, page 13

What is the breakdown of the current 6% administrative cost to run the current NWTF? (i.e. salary, travel, administrative costs) What is the justification of almost doubling this amount? What assumptions are made in relation to the number of projects that would require extensive field work by MDA? What would the cost be if this work was contracted to a private consultant or to summer students?

Thank you for giving me the opportunity to comment on the PEIS. Please contact me if you have questions on my discussion.

Best Regards,

Mary B. McKone

Mary B. McKone
DowElanco
Technical Service and Development

S Please refer to additional text added to page 6-13.

Letter #25

CASCADE COUNTY
Weed and Mosquito Management District
521 - 1st Avenue N.W.
Great Falls, Montana 59404
Phone (406) 727-2804

January 21,1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural and Biological Sciences Div.
Capitol Station
Helena, Montana 59620-0205

Upon reviewing the Draft Noxious Weed Trust Fund Programatic Environmental Empact Statement, I would like to make the following statements.

I do not feel that the entire process of developing a PEIS for this grantprogram was necessary at this time.

I do feel that the environmental issues of concern have been addressed by the DPEIS.

The issues developed and the information presented in the DPEIS do not seem to warrant any changes from the present course of action.

In that light, I feel that ALTERNATIVE 1 - THE CONTINUATION OF THE EXISTING NOXIOUS WEED TRUST FUND PROGRAM be adopted as the preferred and proposed course of action by the Department. Any perceived shortfalls in the present program can be addressed using a modified Environmental Action Checklist, form(NW1003), rather than requiring an EIS or an EAS for specific projects with their additicnal requirements for manpower and expenditures by both the Department and the requesting organization.

Thank you for this opportunity to comment.

Sincerely;

James S. Freeman, Weed Supervisor
Cascade County

Thank you for your comments.

Letter #26

WETA

Western Environmental Trade Association

208 N. Montana Avenue, Ste. 104 - Helena, Montana 59601
Phone (406) 443-5541
Fax # 443-2439

January 21, 1992

Weeds PEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

Dear Sirs:

On behalf of the Western Environmental Trade Association, I'd like to thank you for the opportunity to comment on the Draft EIS for the Noxious Weed Trust Fund.

Our association would like to acknowledge the past success of this program as an integral part of the state's efforts to control noxious weeds. In our belief, it is critical that it be continued and we do not support the third alternative presented in the document calling for dropping the program.

Further, while Alternative 2 does have merit with regard to guarding against the potential for environmental impacts we believe that the excellent track record of the program demonstrates the liability is minimal. With the state's budget situation calling for every dollar to be spent in a manner that derives the greatest public good, the estimated $140,000 that would be spent on Alternative 2 is better reserved for on-the-ground efforts at this time.

As a result, the Western Environmental Trade Association would like to offer its support for Alternative 1 calling for the continuation of the program as it is presently being administered.

Thank you again for allowing us to express our support for the Montana Noxious Weed Trust Fund Program.

Sincerely,

Peggy Olson Trenk
Executive Director

Thank you for your comments.

Letter #27

MONTANA WEED CONTROL ASSOCIATION
POST OFFICE BOX 1911 • BOZEMAN, MONTANA 59771

January 21, 1992

NWTF DPEIS DRAFT
Mt. Department of Agriculture
Capitol Station
Helena, Mt. 59620

The Montana Weed Control Association would like to submit, for the record, their position on the DPEIS Draft.

The MWCA at it's annual business meeting held January 15, 1992, preferred alternative number one. We feel that the Trust Fund Grants program is run very well and is an excellent way to manage weed control efforts in the State. The Second alternative we fell, would slow down the grant applications and could provide to become a burden on the grant applicants. The third alternative is totally unacceptable.

The MWCA does however feel that alternative one should require more information on environmental issues in a project area, but not to the extent in alternative two. We feel that if more information is obtained by the grant applicant such as more detailed maps, a list of all water ways, lakes, and ground water depth, this would give the NWTF Advisory Council sufficient data to make decisions on projects without having to do a EIS on that project.

The MWCA believes that if local grant applicants are forced to do an EIS they will stop submitting applications. This would be a disaster for the grants program and we feel it would end the program.

Sincerely,

David Burch

David Burch, President
Montana Weed Control Association

Thank you for your comments.

Letter #28

LOON LAKE RANCH
P.O. Box 270
Big Arm, Montana 59910

December 21, 1991

Montana Noxious Weed Trust Fund
Weeds DPEIS
Mt. Dept. of Agriculture
Capital Station
Helena, Mt. 59620-0205

Dear Sirs:

As a Lake County Soil Conservation District Supervisor, I wish to comment on the"Montana Noxious Weed Trust Fund Grants" program.

Having participated in the program to control weeds on our ranch and now as a sponsor for other associations to implement the program through our local Soil Conservation Service, I can emphatically state the program has been a great success. If anything, the program should be expanded to include more individual ranches and more groups. I know that there are many ranchers that would have been unable to control their weeds without this program.

We have all benefitted immensely by these dollars being available for assistance in controlling one of our most pressing problems in the ranching environment. You are to be complimented on the outstanding job done so far, and please let us not stop when we have much more work to do--to rid our state of these insidious range robbers.

Sincerely,

James M. Binger

James M. Binger

Thank you for your comments.

Letter #29

Dave Burch
Weed Supervisor

LEWIS & CLARK COUNTY WEED DISTRICT

3402 Cooney Drive
Helena, Montana 59601
443-5672

Glenn Bristow
Weed Manager

January 21, 1992

Mr. Everett Snortland, Director, Montana Department of Agriculture
Mr. Gary Gingery, Administrator Environmental Management Division
Montana Department of Agriculture
Capital Station
Helena, MT 59620

Dear Mssrs. Snortland and Gingery:

Thank you for the opportunity to comment on the Draft Programmatic EIS on the Noxious Weed Trust Fund (NWTF). We find the Draft EIS to be well written and organized. We also feel that it adequately addresses many issues. We do have several questions and comments that we would like you to address.

A Please provide a more in-depth description of staffing in support of the NWTF program for Alternatives 1 and 2. The DEIS identifies the state weed coordinator/trust fund manager's current responsibilities. What is the breakdown of time spent by the coordinator and program assistant by task or function. What is the breakdown of time for each staff person proposed under Alternative 2? What percentage of time and money is supplied by other MDA staff and programs as technical or other services to NWTF program. We feel that MDA should consider separating the functions of the weed coordinator and trust fund manager, such that the weed coordinator would be responsible for activities/programs conducted prior to the implementation of (and funding by) the NWTF program.

It appears that Alternative 2 is essentially addressing MEPA compliance for the NWTF program. Will the addition of new staff be able to meet this challenge adequately? Thirty-five of 112 on-going projects were visited by the coordinator in 1990. Will it be possible to visit all projects at least once as proposed on page 5-3? If MDA is going to assume the responsibilities of MEPA compliance, one visit may not be adequate. We feel that it would be helpful to have before and after visits.

The Lewis and Clark County Weed Board supports the effort to require more thorough and consistent environmental documentation for grants utilizing herbicides for weed control. We generally support the proposed program as described under Alternative 2. However, given our questions about NWTF program staffing, we are concerned about how our county weed district will be able to comply with the grant application requirements. Some information, such as

A Current breakdown time of the staff directly assigned to the Noxious Weed Trust Fund grants program includes:

Weed Coordinator (1 FTE)
- 50% Program Management: manages program budget; administers trust fund revenues; program evaluation; arranges meeting for council members; monitors grants; coordinates federal, state, and private resources to implement effective weed management.
- 45% Public Relations: works with local weed districts and communities to plan and organize weed management projects; disseminates information to interested parties on wood management and the grants program; contacts weed scientists, educators, and other programs; contacts weed scientists, educators, and other groups to coordinate weed trust fund activities; cooperates with western states to coordinate regional weed management programs.
- 5% Other duties as assigned.

Program Assistant (.67 FTE)
- 45% Program Function: maintains word and data information systems for contracts and financial reports; draft weed program policies, procedures, and manual materials; drafts statistical and narrative reports on the herbicide surcharge, grants and noxious weed programs.
- 25% Bookkeeping: drafts budgets for the noxious weed program; participates in review of noxious weed herbicide surcharge collection.
- 15% Public Relations: drafts correspondence concerning noxious weed program functions and policies; serves as liaison between the department and other governmental units and the public to provide program information.
- 10% Typing and Personal Computer: arranges formats to produce finished typed material from supervisor; types letters, memos, reports, forms, tables, contracts and confidential materials to produce drafts and final copies for the weed program.
- 5% Related work as required.

Program Aide (.25 FTE)
- 100% Herbicide Surcharge: collection and organization of herbicide surcharge reports; input of computer data; editing; generation of preliminary and final reports.

It should be noted that all of the time spent by the staff funded by the Noxious Weed Trust Fund program is on activities related to the adequate functioning of the program.

Other MDA staff time included in effective operation of the program include:

- **Director/Department of Agriculture**
  Chairman of the Noxious Weed Advisory Council; final decisions on all grant funding.
- **Administrator/Agricultural & Biological Science Division**
  Supervision of program and budgeting.
- **Bureau Chief/Technical Services Bureau, ABSD**
  Supervision of noxious weed program staff.
- **Pesticide Specialists**
  Help with collection of the herbicide surcharge; licensing requirements.

The time provided by these individuals varies, depending on current projects. All other MDA staff time is funded by revenue sources other than the Noxious Weed Trust Fund.

B soils information is readily available; other information is not. Also, it is not possible, at this time or in the near future, to add staff with the appropriate expertise to our district. Will MDA be able to provide the necessary support and/or will the NWTF program allow for environmental documentation costs in each grant. Since water pollution issues are at the heart of herbicide use, we feel that the State should consider providing the necessary groundwater baseline information/maps. Alternatively will the NWTF support grant requests from counties that include a budget item to compile baseline information county-wide?

C In cases where MDA decides that a grant project requires an EIS, who will pay for it?

D Does the Bureau of Reclamation have a weed control program that should be presented in Chapter 2?

E Of the other entities which use chemical control methods for noxious weed in the State, which have completed EIS's on their programs.

On behalf of the Lewis and Clark County Weed District

Pam Hackley

Pam Hackley, Chair

S. Blackman, Vice-Chair
B. Hall
L. Miles
T. Novak

B Nothing precludes grant applicants from requesting funds for developing baseline information prior to, or during, development of the grant application.

C See Letter 16, Response C.

D An additional section has been added to the text regarding the Bureau of Reclamation's program. See page 2-17.

E See text revision on page 2-13.

Letter #30

MONTANA STATE UNIVERSITY
1893•CENTENNIAL•1993

Extension Service
Department of Plant and Soil Science
Montana State University
Bozeman, MT 59717-0312
Telephone 406-994 4601
Telefax 406-994-3933

January 21, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena, MT 59620-0205

My comments on the Weeds DPEIS follow:

p. 2-1, column 2, paragraph 4, line 6-9: Common crupina has been present in California since at least 1975.

p. 2-2: Canada thistle habitat should also include dryland and irrigated cultivated crops.

p. 2-2: Whitetop seems to prefer slightly alkaline soils but can be found on almost any soil type. It is very common in irrigated crop fields but also is a problem in dryland grain and range. It will grow on land much too dry for alfalfa.

p. 2-2: Dyers woad acreage affected is 323 according to Pete Fay's eradication project proposal submitted to the Noxious Weed Trust Fund in 1991.

p. 2-2, Yellow starthistle: Life form - winter annual; Habitat: disturbed areas, rangeland, and dryland and irrigated pastures.

p. 2-2, Common crupina: Date of introduction - Introduced in Idaho in 1969, now found in Idaho, Oregon, Washington, and California (Prather, T. S. et al., 1991. Common Crupina, Biology, Management, and Eradication. Univ. of Idaho, Current Information Series No. 880); Life form - winter annual.

p. 2-2, Rush skeletonweed: Habitat should also include dryland and irrigated crop fields.

p. 2-5, column 2, paragraph 1: The economic costs of leafy spurge in Montana have been detailed in a report from North Dakota State University (Agricultural Economics Report No. 275, October 1991) called "Economic Impact of Leafy Spurge in Montana, South Dakota, and Wyoming".

p. 3-7, column 1, paragraph 2, lines 4-7: The comment is made that less than 10% of the original infestation designated for treatment in Silver Bow County remains. Does this mean less than 10% remains untreated? Since spotted knapweed seed lives for 10 or more years, then the other 90% which was treated for at most 3 years, must still have spotted knapweed present, even if at reduced levels.

p. 3-7, column 2, paragraph 3: Same comment as for Silver Bow County (see previous comment).

p. 3-8, column 1, paragraph 3: What does complete control mean? Same comment as for Silver Bow County.

p. 3-9, Figure 3-3: Since spotted knapweed was only suppressed (and not eradicated) from these treated areas perhaps the captions should read: initial treatment area and initial treatment area not treated.

Respectfully,

Dave Zamora

David L. Zamora
Extension Weed Specialist

Your comments have been addressed in Chapter 2 & 3 text changes.

Letter #31

January 22, 1992

Montana Department of Agriculture
Agricultural & Biological Science Division
Agricultural/Livestock Building
6th & Roberts
Helena, MT 59620

RE: Draft: Noxious Weed Trust Fund
Programmatic Environmental Impact Statement

In response to the above Draft, I recommend by all means continue the program; in that noxious weeds have the greatest impact on the continued productivity of our range and agricultural lands of this state.

At this time I recommend Alternative 1, believing that the cost of implementing Alternative 2 in this time of budget constraints, could be more effectively used implementing control programs and research.

In any event the Noxious Weed Trust Fund must continue.

Sincerely,

Ted Lucas

Ted Lucas
Rte 1, Box 43
Highwood, MT 59450

Thank you for your comments.

Letter #32

January 22, 1992

Mr. Everett Snortland, Director, Montana Department of Agriculture
Mr. Gary Gingery, Administrator, Environmental Management Division
Montana Department of Agriculture
Capital Station
Helena, MT 59620

Dear Sirs,

The Montana Environmental Information Center (MEIC) submits the following questions and comments on the Draft Programmatic EIS (DEIS) for the Noxious Weed Trust Fund (NWTF) for your consideration.

A Will the new staff proposed under Alternative 2 be able to handle the MEPA requirements adequately? If MDA is going to assume the responsibilities for MEPA compliance, one site visit per grant project may not be adequate. We think that three visits at a minimum should be required to confirm baseline conditions, on-going project implementation, and results to adequately assess impacts and success. A monitoring program should be integral to the overall grant process.

B It also appears that the checklist will fall short of providing the level of information needed to determine potential impacts and the need for subsequent environmental documentation. Consider asking for a detailed explanation for any question that is answered "yes". Consider asking the applicant, who was consulted or what information was drawn upon to determine that a "no" answer was appropriate.

C MEIC supports the effort to require more thorough and consistent environmental documentation for grants utilizing herbicides for weed control. We generally support the proposed program as described under Alternative 2. However, we do not think that the draft EIS addresses cumulative impacts. The fact that the NWTF program accounts for only 5% of the chemical control of noxious weeds in Montana is not justification for the statement that "cumulative adverse impacts resulting from herbicides and other weed management methods applied through NWTF cooperative weed management projects are negligible". The case has not been proven. Impacts resulting from the other federal, state, local, and private programs must be assessed in conjunction with other past and present actions related to the proposed action by location or generic type (please refer to MEPA Rules II. (7)). It may be possible that a reassessment will show that adverse impacts resulting from all other activities have already exceeded acceptable limits or that the incremental addition of potential impacts from continued implementation of the NWTF program would exceed this threshold.

D Please explain in more detail why research programs do not constitute actions which have the potential to impact the human environment and could thus be categorically excluded from MEPA requirements.

Please clarify whether any research funding through the NWTF is directed to herbicide research.

Thank you for the opportunity to comment.

B. McNitt

Brian McNitt
Montana Environmental Information Center
P.O. Box 1184
Helena, MT 59624

A Thank you. Your comment has been noted.

B It is understood that the currently used checklist falls short of MEPA compliance. A reformatted checklist will be developed by the MDA. The suggestions presented are useful and will be considered.

C See Letter 21, Response C.

D See Letter 11, Response A.

Letter #33

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
WATER QUALITY BUREAU

STAN STEPHENS, GOVERNOR

Room A-206
COGSWELL BUILDING

STATE OF MONTANA

1374

FAX # (406) 444-2606
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HELENA, MONTANA 59620

January 22, 1992

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capital Station
Helena, MT 59620-0205

Dear Sir/Madame:

I have reviewed the Draft Programatic EIS on the Noxious Weed Trust Fund and the following are my comments.

A The description of chemical weed management on page 2-6 of the document should provide information on the number and different types of chemicals registered within the state and their uses. The reader is led to believe that picloram, dicamba, 2,4-D, clorpyralid, and glyphosate are the only chemicals in use.

B Table 2-4 on page 2-14 is titled "FY 1991 County Weed Fund Budgets", but gives little information that one would expect to obtain from a budget. The figures for the counties total to just under 5.2 million. The document should provide a table that identifies how this money is spent. At a minimum, the reader should be informed as to expenditures for personnel, herbicides, fuel, and equipment and supplies. If funding is dependent on the criteria listed on pages 3-2 and 3-3, this information should be available for all counties that have received NWTF cost-share monies.

C The Bureau of Reclamation is a large landowner in Montana and should be included among the agencies listed on pages 2-16 through 2-18. Their chemical weed control practices could have a significant effect on the state's water resources.

D Chapter three should have a separate section that describes how funded projects were evaluated in the past by the Department of Agriculture. The chapter mentions estimates of success by the project coordinators or sponsors and evaluation based on the number of publications resulting from research. These examples illustrate a serious lack of objective evaluation of a very costly program. The last paragraph of the chapter is disturbing. Success of the funding program is proportional to the number of people asking for the money?

E Alternative number two combines the application requirements for education and research projects and exempts research projects from providing environmental information. This is a serious flaw. Experimental work with chemical herbicides

A The herbicides described in the PEIS are those most commonly used for noxious weed control. A complete listing of herbicides registered in Montana can be found at MDA.

B It is beyond the scope of this PEIS to address specific concerns and funding of Montana weed districts. Table 2-4 was included for comparison purposes only. Please refer to Response A of Letter 23.

C Additional text has been added on the Bureau of Reclamation weed control program. See page 2-17.

D The last paragraph of Chapter 3 is a comment on the educational portion of the grants program, not an evaluation of the grants program as a whole. There has been no specific attempt to evaluate if an increased knowledge of weed management in the state is directly related to funded educational programs. It was assumed that an increased awareness in the grants program stemmed from educational programs targeting the noxious weed problem in Montana over the last several years.

Current evaluation of the projects is based on field evaluations by the state weed coordinator; an assessment of the project by reports and photopoints submitted; and review by county weed supervisors and county agents when possible.

E See Response A of Letter 11.

can pose a threat to the environment. The application requirements for research projects should not be combined with those of educational projects. Applications for research projects that include the use of chemical or biological weed control methods should be required to describe the affected environment and potential impacts. These projects should not be excluded from MEPA review requirements.

F The description of the potential indirect impacts of herbicide treatments to non-target plants is inadequate. The section on page 6-2 should list and describe the potential impacts rather than simply making the statement that damage does not occur.

G The description of indirect impacts of herbicide treatment on soils should describe the impacts of chemical loading.

H The section describing indirect impacts of herbicide treatments on wildlife states that "herbicides pose little risk to wildlife because: many species move away from spraying operations...". Wildlife displacement is an adverse impact and should be listed as such. What are the effects of herbicides used in Montana that don't degrade rapidly and do accumulate in the food chains? The section should give the number of acres treated annually with herbicides. The section should list the classes of wildlife adversely affected by herbicides applied according to label instructions.

I The section describing the human health effects of herbicide treatments should describe the health consequences of exceeding "acceptable daily intake" levels.

J The discussion of the impacts of alternative three should discuss the effect of program discontinuation on research and development of biological and mechanical weed control methods.

Thank you for the opportunity to comment on the draft EIS. Please let me know if you need clarification.

Sincerely,

Timothy Byron
Permits/Groundwater Section
Water Quality Bureau
Environmental Sciences Division

cc: Dan Fraser, WQB

F Please review text on page 6-2 and 6-9.

G See page 6-3.

H Herbicides used for noxious weed control in Montana do not accumulate in the food chain as did some of the organo-chlorines such as DDT. Although several herbicides have residual properties, they are degraded by sunlight and/or microorganisms to an inactive form.

I The discussion on page 6-12 and 6-13 under Human Health; Herbicide Treatments, has been modified to delete the reference to acceptable daily intake (ADI). ADI is a limit established for consumption of foodstuffs as opposed to limitations established for the more general exposure to pesticides. Since the NWTF program is designed to address noxious weed infestations on rangelands, the reference to ADI is inappropriate.

J See text on page 6-16.

Letter #34

United States Department of the Interior
BUREAU OF RECLAMATION
Great Plains Region
Montana Projects Office
P.O. Box 30137
Billings, Montana 59107-0137

TAKE PRIDE IN AMERICA

IN REPLY
REFER TO:

MT-424

Weeds DPEIS
Montana Department of Agriculture
Agricultural & Biological Sciences Div.
Capitol Station
Helena MT 59620-0205

Subject: Review of Department of Agriculture Draft - Programmatic Environmental Impact Statement (Environmental Impact Statement)

Dear Mr. Snortland:

We have reviewed the subject document and are providing our comments at this time.

A On page 2-13, section entitled "Montana Weed Management Programs", please insert the following paragraphs.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation, Montana Projects Office, is responsible for administering 13 federal water projects in Montana. Associated with these are 11 dams and reservoirs, 9 diversion dams, 10 pumping plants and 2 powerplants providing a variety of benefits including flood control, irrigation, fish and wildlife, recreation and power production.

Lands adjacent to these facilities include 109,574 acres of acquired lands and 144,706 acres withdrawn for project purposes. There are also 18,780 acres carrying easement rights. Weed mapping indicates approximately 3 percent or 7,600 acres have some level of infestation by noxious weeds. Weeds are disseminated on these lands primarily through water and vehicular sources. Weeds are concentrated and prolific at some locations and entirely absent from others.

Depending on funding, Reclamation expends between $30,000 and $50,000 for weed control per year. Management activities include spraying and the use of sheep and goats at Tiber and Clark Canyon Reservoirs. Experimental use of several insects as biological control agents has also been supported and provided for on Reclamation land.

A This section has been added under "Montana Weed Management Programs" on page 2-17.

Chapter 5 "Program Alternatives"

We believe there is adequate analysis of this program so a preferred alternative should be identified in this chapter. Upon completion of the analysis, an MDA Record of Decision should be issued.

B

Chapter 6 "Direct, Indirect and Cumulative Impacts" page 6-1, Column 1, last paragraph

We are concerned with the tone and priorities presented in this paragraph. The paragraph should read, "Direct environmental impacts are those associated with potential mistakes resulting from treatment methods discussed below, including but not limited to herbicide treatments. These potential impacts include ground and surface water contamination, misapplications, worker safety and non-target vegetation damage. Indirect impacts associated with current administration of the program include potential financial liability to grantees and the State of Montana. The NWTF program accounts for 4.2 percent of chemical control of noxious weeds in Montana (see TABLE 3-2). The State of Montana considers these potential impacts acceptable in return for the enhanced economic and environmental quality of life discussed below which the program provides as a result of reduced noxious weed infestations."

If you have any questions regarding these comments, please contact Tom Parks of this office at 657-6733.

Sincerely,

ACTING Richard L. Lorg

J. (Jim) L. Wedeward
Project Manager

B Please refer to Response A of Letter 23.

Helena - January 10, 1992

Testimony #1

Charles Hahnkamp

"Well I'm Charlie Hahnkamp from Melrose, Mt. I've been affiliated with weeds since I can remember, I guess. We, in Headwaters RC & D, have been instrumental in noxious weed trust fund. We've followed it very closely. We think it was set up pretty good and I think it's doing a pretty decent job just the way it is. We worry a little bit about the EIS's and the EA's and all that we know it's going to take more people and more help to get these things done, so we feel that another added person would probably be in order to help do this work. We wonder, in talking things over, how much this 11% money, this $60 some thousand dollars, how far that's going to go up to take that much more money to just hire one person or whether it'll take care of all of the EIS work and EA's. We know that Barb has a big job, we wonder how much of Barb's wages or whatever, how much is spent just on the trust fund and whether if you have this extra money could Barb spend more time with just the trust fund. Then we understand that the herbicide surcharge sunsets in July where would that money go or that position that collects that money, what is it 3 months or so, that have been contracted would that money revert back into the trust fund. We also wonder if in some other organizations, such as Forest Service and SCS if they might have personnel that would be used in the EIS and could get out and look at these programs to see they need an EIS on any of them. That would take some of the money and stress off of the trust fund money. I'm real against spending any more money than we have to on personnel stuff. I like to see all the money we can, put on the ground. That was the object of the trust fund money to try to control weeds. If too much time spent on paper and not on the ground, this always disturbs me particularly. Like I say I think that in our area we have a real good program, we haven't had any wrecks and I feel that we don't really need the EISs and the EAs' to keep us out of trouble. We've never gotten into any trouble and I don't feel that there is any reason to worry about any trouble that much, as long as we've got good people like we have to watch us. I guess that's about all. Any questions?"

Thank you for your testimony.

Billings - January 13, 1992

Testimony #1

Dave Pickett

My name is Dave Pickett. I represent the Butte-Silver Bow weed board. The document was reviewed by weed board members and the weed supervisor and extension agent, and we offer the following comments. I'd like to just address a couple of general areas. We'll submit our written testimony by the 22nd and we've got some page and cite specifics that will be included in that. I'm not going to address those here today.

You can't hear me? I must be off. Don't ever let that get out. You're my favorite person. If I'm not speaking too loud. I'm always accused of doing the opposite. Is it working now? Alright.

First, what I want to talk about is the quality of the document. We were disappointed by the obvious lack of expertise in weed management and weed science as demonstrated by Chen Northern. There was an obvious bias against chemicals, which results in a lack of objectivity in dealing with impacts and unwillingness to consider possible alternatives. The document is less than objective in suggesting what is necessary to continue what has been a very successful program using current procedures. If you want examples, on page 6-12, discussing indirect impacts for alternative 1, these folks actually put a sentence in there that reads handpulling of weeds can expose workers to hazards such as poisonous snakes. I don't know how many of us have ever been bitten by a poisonous snake pulling weeds, I might have had to go to a chiropractor once, but why not talk about the positive economic impacts created by the sale of gloves. This is just ridiculous. This document contains a gallon of reference data, a pint of improbable impacts, and a teaspoon of objective analysis. We suggest the only reasonable way to correct the quality problems with this document is to have some review and revision done by people competent in the subject matter being addressed.

I'd like to talk a little bit about the discussion of impacts. We were particularly concerned, I guess, by the continual reference to things such as 'has the potential to', 'may enter', 'may reach', 'could potentially impact', 'could be affected'. That's fine, but what are documented impacts of weed management. Certainly there must be some that we could talk about. We couldn't see much point of filling pages with improbable, insignificant worse-case scenarios. It doesn't do much to contribute to this analysis and it does give the anti-chemical, anti-weed control interests a lot of quotable material. While bashing chemical methods, there is a lack of objectivity in addressing the impacts of other elements of the program. An example is education. This document talks like educating people about chemicals has no environmental impact and yet using chemicals does. I would ask how many people who have been involved in education with landowners or other people didn't find that most of those people that once they were educated became aware of the problem, knew how to address the problem, didn't

Your verbal comments are similar to those you submitted in writing. See Letter 22 responses.

subsequently use chemicals in dealing with the problem that caused them to get educated in the first place. Well, if you want to be objective about it, why didn't you indicate that there is environmental impacts connected with education too. A lot of weed education leads to the use of chemicals.

Entering another area that we have a high degree of concern about. It appears to us that alternative 1 obviously places a high degree of responsibility on the project sponsors to conduct the work properly with minimal environmental impact. We think the record shows that, so far, this has worked very well. While we would favor an increase, a minimal increase, in monitoring, we are totally opposed to an increase in the MT Dept of Agriculture staff to do this work. We suggest using private contractors and extension agents on a trial program to do monitoring. We suggest a bi-level program where all projects get a minimal level of review and those that indicate that possibly something more should be done are then addressed in whatever degree of intensity is necessary. With the number of projects funded annually, it is unreasonable to expect any great amount of monitoring to take place on all of them. Indeed, that past experience shows that a major increase of monitoring is unnecessary. We feel that this is one of the major faults of alternative 2.

Another area we wanted to talk about a little bit was the application process. We're appalled at the idea that a major increase in data be required for each project application under the assumption that this will lessen environmental impacts. No matter how much material is submitted, the conduct of the work is what will determine the extent of environmental impacts. If people explained what methods they were going to use and then use materials such as chemical, specified by label instructions, the enviromental impacts are not going to be a problem. We think that the record proves that. To require this kind of data submission on the part of landowner groups that are putting together projects is going to force them to hire consultants. I think we can think of at least one, possibly the contractor that prepared this, to compile the information. Most landowners are not going to be able to do this. The typical landowner can be educated in and practice proper weed management alternatives, few have the background and time to prepare what you're proposing in alternative 2.

Another area we were a little concerned about was the consideration of other alternatives. The superficial dismissal of directing some money to the county level directly to the county level to accomplish statewide objectives on page 5-3 demonstrates a lack of understanding and objectivity and unwillingness to innovate, which is not unexpected given the nature of the preparer. However, we expect better of the advisory council and the department. There are many possibilities for funding county programs directly so that effective, efficient weed management is accomplished. Much of what we accomplish on a statewide basis is the cummulative result of many local actions. The key here is to design a program that places conditions on county weed programs so that you can be

confident that the money given will be used properly. We challenge the advisory council and the Montana Weed Control Association to develop a program to do just that and have it enacted by the '93 legislature. Just one example relates to the county weed supervisor position. We feel it is critical that all counties or groups employ a full-time weed supervisor who can implement an integrated comprehensive weed management program. The weed supervisor must be directed by a competent, active weed board. A program could be developed that would use some of the trust fund to reach this objective.

Another area we were a little concerned about was, this was more of a math problem possibly, I hope it is, is the use of Noxious Weed Trust Fund money for other than project accomplishments. We used the author's math and it appears that administrative costs would increase from $80,000 to $140,000. This could fund two, possibly three extra positions. The things that are going to be required of this draft in alternative 2 could in no way, shape or form be accomplished by that number of people and so we feel that what will happen if alternative 2 is adopted is that administrative costs will continue to rise until they exceed 20% of the funds available, and I guess I would paraphrase this by thinking about the camel's nose in a tent and how that works.

In summary, we recommend that you not adopt alternative 2. Modifications of alternative 1 along the lines suggested above will do the job. We also urge that you pursue new approaches for effective use of trust fund money. If you emphasize well-planned projects by competent, reasonable people and minimize bureaucracy and paperwork, you will serve the environment and the economy in Montana well.

Thanks for the opportunity to comment and any questions, I would be glad to try and answer.

Testimony #2

Neil Peterson

Neil Peterson, weed coordinator from Madison County. The comments and positions I state in here will be from our positions developed by the Madison County Weed Board January 6, 1992. I'll be speaking for the Madison County Weed Board. The Madison County Weed Board prefers alternative #1 and to continue the trust fund as is currently administrated. The board believes that the trust fund is an excellent weed management activity and no changes are necessary. Other alternatives would be a step backward in a statewide weed management program. In essence if a program isn't broke it's not in need of fixing.

We have several comments for positions, the board does, in regards to alternative #2. I have material I'll hand you in three copies. (1) is the board's position is the decision, for what level of document environment check list, environmental analyses or an environmental impact statement to accompany a project request, reside with the county weed board.

(2) that no additional paper work requirements become so technical or burdensome that it restricts editing in submission of request. It is really quite a concern to our board. And the board believes that the county has the capability to ascertaining the level of the needed environmental document. Also that we don't believe that there is any one person or group of people that have the capability, this is not reflected as a criticism but as a reality in a state as vast as Montana to be familiar with all the impact that a weed program can have throughout the 56 counties in Montana. So why enter another judgmental level into a program that is already working. The other thing that we would like to see in strengthening our position on this is that any time you take the decision making process away from the county you are only weakening the professionalism that's the goal that we should be obtaining in weed management in the state. To continue to get this professionalism and continue to meet the needs of MEPA, (I guess that's how you pronounce it) we believe that the trust council, Montana Department of Agriculture should be facilitators in setting up workshops, seminars or whatever, to help train and acquaint county people to meet the criteria of MEPA. Because it has been proven many times that you can write all the beautiful paper plans in the world but it won't prevent accidents or incidents. Or the way you do that is through training and development of knowledgeable and trained people that are going to do the job, and who's going to do the job but the county people or the field level people that are out there actually handling the programs within your county. So training is very important if we are going to look at alternative 2.

(3) -the board does not feel that non-chemical requests that stated in alternative 2 should be exempt from it. Some of these types of requests also deal with chemicals and things like this. The main criteria here is that all requests for the grants should be treated equal in the decisions retained by ????? that request. The board has taken a position regarding administrative costs, and their

Your verbal comments are similar to those you submitted in writing. See Letter 11 responses.

position is the minimum and enabling act of 1985 says in 80-7-814 3D "states the cost reflecting surcharge is not to exceed 3%". Therefore, the board's position is that administrating costs be 5% and never exceed 6.5%.

(4) - the board has a concern that the funding for non-chemical request are exceeding the intended governing legislation. The data from the DPEIS states the 1990 funding level at 41%, (correct 40.6% to be exact) for non-chemical requests. The vehicle fee act states 25% for non-chemical request and the 25% was based on the intent of the 1985 trust fund act. Therefore, 41% is outside the intended governing legislation. Also the board recommends that non-chemical requests, majority originating from the University System be county co-sponsored type of requests for grants. This recommendation is founded on the following concept: the co-sponsoring will develop a better working relationship and understanding between field level administration and research activities; 2) - development of research activities that ground-doers need and want and; 3) - provide increased support and interest for research and more specifically for educational weed prevention, detection and moderating activities, and; 4) - the board's concern is that the EIS did not address the need for a state level coordinative weed management plan. The board recognizes that there are presently successful accomplishment in weed management. The board also knows that currently weed management jurisdiction barriers are being reduced that inter-county coordination is being obtained. This is exactly what is needed for a successful professional weed management. The state level plan should not be a "big brother" plan but one that addresses better coordinating programs, set forth coordinating activities for addressing means for managing specific activities weed management, specific weed species and broad action for accomplishment. And the board believe that the vehicle for developing such a plan is available. These vehicles are the MT Weed Control Association, formed Geographical Weed Groups, The Trust Council and the State Weed Coordinator. This type of coordination is needed in lieu of every entity in this state, beating their own drum for weed management.

That's what we have and there are a couple more that I didn't get put in this document. And that is that the board is concerned that in this programmatic EIS there was (in the alternatives) no preferred alternatives. Now an EIS in my interpretation is intended the equal process, is that it is an action document that evaluates and develops the impact and the consequences of any act alternatives. This is not done, and I don't believe that it should have dismissed the other two alternatives. They have to be evaluated by the EIS process and there should have been a preferred alternative showing action to the people that understand what was being developed. Because there is still action going to develop out of this program, the way we read it, and it needs to be addressed what action is preferred and then the public can be acted on. That is the intent of MEPA, the public interaction and communication and development of things. Now I have signed off on many programmatic type of documents in my career, and programmatic

documents the way we have used them in the ones I've been involved in, you deal with a specific activity within a program and I'll take the program of range management for example, and I've signed off on programmatic environmental analyses that took care of water developments in range improvement programs, your activity, water developments, maintenance, construction and reconstruction of fences, maybe some sagebrush burning, maybe even some work on the working and quaken aspen development. Those were programmatic things. We were going to do something, but we've covered the whole broad field and told the public "yes we are going to do something and this is what we're going to do" within these minor impacted but we evaluated them. And that's the way, I don't really believe this is really a programmatic, it should be a straight EIS and it should have a preferred alternative. Thank you.

Testimony #3

Larry Beneker

"I'm Larry Beneker with the Bureau of Indian Affairs and I just have a real short comment, nothing in writing at this point, but I
A will follow up with something in writing." On page 2-17 I want to refer to the concerns of the statement on the Bureau of Indian Affairs specifically, the statements concerning tribal lands need to be changed to indicate "trust lands". We deal with both tribal and allotted (meaning individually owned) lands and we do deal with those within our programs. The 5.7 million acres is an indicator of total trust acres. We re-evaluated our program at the end of 1991 and feel that we need to change the dollar figures. We had $550,000 that was given to the Billings area program for noxious weed control. There were several agencies that did take bureau funds and increase there programs so that we could put in a dollar figure of $578,700, that's bureau dollars, total. And we were able to treat approximately 23,000 acres, that includes chemical control, bio-control, cultural control, the whole ball of wax. So I want to make those amendments.

I have some concerns about the alternatives. One question I had a specific concern about was that if we do look at alternative #2 we put a lot of burden, as was mentioned, on the applicators. I have seen in the process of years over the time that I have sat as an Ex Officio member on that board. There are some people that come in that don't have access to some of these requirements and I would be concerned that this alternative #2 would eliminate some of the folks that may not be able to get their hands on material such as water table, whatever information, depth of ground water, locations of springs, etc. They know some of that stuff. I've seen some of them come in not willing or able to do that. And by willing I shouldn't say that their not going to run the program well, they just haven't taken the time, but they have a concern for the weed control program.

B Also in alternative #2 a concern on who makes the determination on whether an EIS or an EA or just an environmental check list is in order? Again that puts a little more burden on those folks that run that project and I know Barb's done a good job with the current program and I to hope that a little bit more of monitoring would be done. We see that the State is large and there are programs going on out there that sometime when I read the proposals I do question possibly the ability of the operators out there, and it's not just the person who stands behind the podium and gives the proposal, but it's 10 or 20 operators out there that are trying to work together and not all doing the same program, not being consistent in manner of operation.

I have no further comments at this point but as I said I will send some in writing before the deadline for written comments.

A See text change on page 2-17.

B See Response C to Letter 16.

Testimony #4

Bob Carlson

"I'm Bob Carlson, I'm the Silver Bow County Weed Supervisor." I've got just a couple of small things here that I guess are probably more technical. One page 212 it refers to the studies that were

A done as far as spreading the seeds of spotted knapweed and when you read that paragraph you end up feeling that if all of the roads were closed in and around the State we could eliminate, (you know put in a lot of road closures) that we would in fact stop the spread of noxious weed seeds. There are two things that I'd like to point out here that need to be considered. That study only concerned spotted knapweed and we have a lot of other noxious weed seed that gets scattered around the State by various methods. Some by wind, whatever, and that should be made clears. Another thing that has to be considered in this - when you put something like this into an environmental impact statement, the original bill that funded this Noxious Weed Trust Fund received a lot of support from Sportsman's clubs through out the State as well as the Montana Wildlife federation. They continue to support the idea of this program today. And it is sort of a sore spot amongst sportsmen and members of the Montana Wildlife federation that they get blamed for scattering all of the weeds in the State by driving down roads and it is starting to get to be a real sore spot when road closures come up due to noxious weeds. So I think we really need to make things clearer in that 212.

B The next one is on page 610 - air quality. It talks about some studies that were done, I think referring to 2,4-D Esters where they can vaporize and go up into the air and drift long distances, and I guess my question here is - has the noxious weed trust fund, in fact, funded any programs that used 2,4-D Esters? I would find it unlikely that we did! If we didn't fund those types of programs then I would suggest that that should be removed. The other comment I have is I think there should be another alternative in there, a little bit different than the 2nd alternative. That 2nd alternative, it looks to me like it's going to put a lot of paper work up-front when you apply for a grant. If we had additional staff to help with monitoring after grant funds were authorized maybe it would accomplish the objective without so much paper work.

A See text change on page 2-12.

B See Response B to Letter 22.

Testimony #5

Mary McKone

Mary McKone - with DowElanCo - This is going to be, I can't say a DowElanCo position, but more of a personal position, I'm not really going to go into a lot of detail I will provide written comments for most of the things. I just want to go through a few things in general, in that I feel the PEIS, the main thing that is lacking is that to me it doesn't give credit to what the trust fund has done for the State. There should be more sections in there on what has been the positive Environmental Impact of controlling the weeds that has started in 1985. They go into the negative impact of weeds but not of what we have gained by controlling the weeds that we have. So I think that is one of the main gaps. Secondly the EIS hasn't appropriately discussed the real relative risk of using herbicides to control weeds in that if you establish the amount of acres that are controlled for spotted knapweed, for instance, with the type of rates that you use on knapweed being different than what you may use on another weed like leafy spurge. And in the type of situation (climate) that we have in Montana what is the real relative risk of causing an environmental problem? I think that needs to be addressed in more detail throughout the entire document.

And the final thing that I think would make it easier as the years go by to keep track of this is to have an overall state plan which was brought up earlier, but it is something that we had a few years ago, but in that if we get started on a good plan that says this is the amount of acres we are going to try and control each year and after the year is over, what did we accomplish, what did we gain from an environmental standpoint in terms of increased forage or increased elk use, and what have we really done with the trust fund from a positive point of view and then when we come up to situation like this we'll be able to show what the trust fund has done for the State economics and for the overall weed control battle. And again I will provide written comments.

Your verbal comments are similar to those you submitted in writing. See Letter 24 responses.

STATE OF MONTANA
DEPARTMENT OF AGRICULTURE
OFFICE OF THE DIRECTOR
AGRICULTURE/LIVESTOCK BLDG.
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EVERETT M. SNORTLAND
DIRECTOR

June 11, 1992

TO: All Interested Parties

FR: Everett M. Snortland *Everett*
Director

RE: Record of Decision - Final Programmatic Environmental Impact Statement for the Montana Noxious Weed Trust Fund

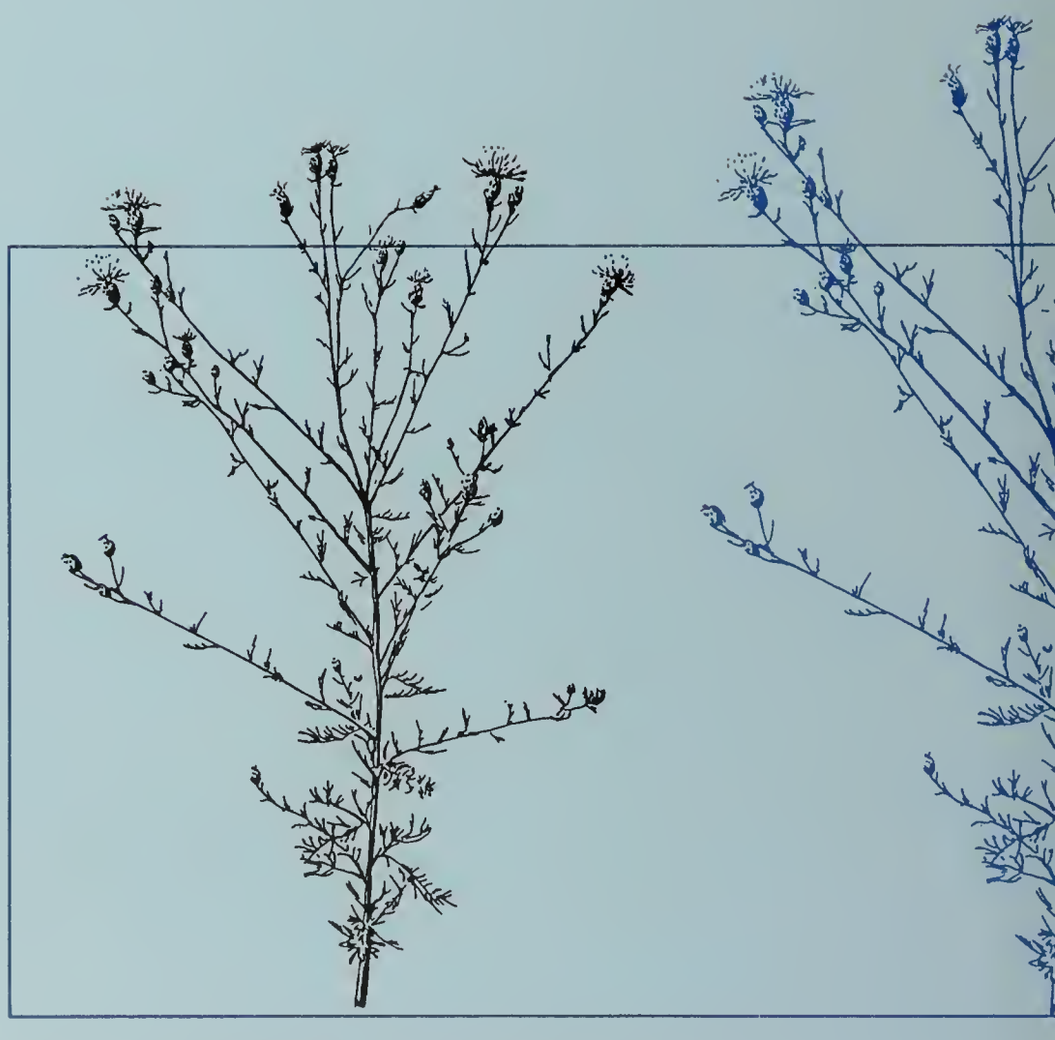
The Record of Decision by the Montana Department of Agriculture regarding the Final Noxious Weed Trust Fund Programmatic Environmental Impact Statement (PEIS) is implementation of the preferred alternative, which is identified in the Final PEIS as Alternative 2.

Alternative 2 (General Administrative Modifications to the Existing Program) was selected based on information presented in the Draft and Final PEIS documents which supported improved environmental review of noxious weed grants in compliance with the Montana Environmental Policy Act. This alternative also provides for improved evaluation of funded projects.

Alternative 1 (No Action - Continuation of the Existing Program) was not selected because it does not allow the MDA to adequately comply with requirements of the Montana Environmental Policy Act. It was determined that there was a need for improved evaluation of the projects. Alternative 3 (Discontinuation of the NWTF Program) was not an acceptable alternative to most commenters on the Draft PEIS. Discontinuation of the program would not comply with legislative intent expressed in the creation of the Montana Noxious Weed Trust Fund Act.

The Montana Department of Agriculture will begin to implement Alternative 2 during fiscal year 1993, based on staff resources available. Full implementation of Alternative 2 will be in fiscal year 1994.

For support information please refer to the Final Noxious Weed Trust Fund Programmatic Environmental Impact Statement, May, 1992, including the "Summary" Chapter 5, "Program Alternatives," and Chapter 6, "Direct, Indirect, and Cumulative Impacts."



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